

JAN 26 1918
THE IRON AGE

New York, January 24, 1918



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H. KOPPERS COMPANY

Builder of

KOPPERS BY-PRODUCT COKE OVENS

Ammonia Recovery Apparatus
Benzol Recovery Plants
Tar Distilling Plants

Consulting Engineers on the Operation of
By-Product Coke Plants and Auxiliaries

Union Arcade Building
PITTSBURGH, PA.

THE IRON AGE

New York, January 24, 1918

ESTABLISHED 1855

VOL. 101: No. 4

Widespread Closing Down of Industry

Declared Objects Are to Give Coal to Vessels
Going to Allies, Relieve Freight Congestion
and Allow the Country to Catch Up on Fuel

Fuel Administrator Garfield startled the country on Thursday, Jan. 17, by an order closing down industrial plants on Jan. 18, 19, 20, 21 and 22 in all States east of the Mississippi, and for nine Mondays beginning Jan. 28, making a total of 13 working days. The order also directed that on the various Mondays no fuel should be burned to supply heat for office buildings, stores and theaters and for other buildings specified.

A storm of protest arose and amid intense feeling efforts were made by business organizations and individuals in all parts of the country to have the order rescinded or its enforcement postponed. The United States Senate by a vote of 50 to 19 asked that the order be deferred five days to permit "protesters to make investigation and to present information," but it had been formally put into effect 40 minutes before the resolution was passed.

Shipyards and steel mills and metal-working establishments having Government contracts were exempt from the order, as were all industries engaged in the production of fuel. The list of exempt concerns has been steadily enlarged in the past few days.

Reports from the industries represented by THE IRON AGE show that blast furnaces have been operated continuously so far as they have been able to get coke. Bessemer and open-hearth steel works have been in operation at many plants to supply steel for rolling for Government work and in many cases to produce ingots which have been stocked, the operation of open-hearth furnaces in the latter cases being justified on the ground that to allow them to grow cold might cause damage and to keep them warm would waste fuel.

No domestic development of the war has caused such amazement and unsettling, but despite the widely held opinion of the unwisdom of the order it has been generally obeyed in letter and in spirit.

Dr. Garfield's Action as Viewed in Washington

WASHINGTON, Jan. 22.—Dr. Garfield's extraordinary order closing down manufacturing plants for 14 days, including all Mondays up to March 25, is chiefly important as indicating the dangers to which the industries of the country are exposed under the present decentralized form of government by detached and irresponsible boards, commissions and "administrations" wielding the unlimited war powers of the President and acting in many cases in open defiance of the well-known intent of Congress. The incident furnishes the strongest possible argument in favor of the creation of a supreme war council and the relegation to a director of munitions of all questions of importance to the manufacturers of the country.

Careful investigation of the circumstances surrounding the issuance of Dr. Garfield's order, supplemented by the Fuel Administrator's own admissions, makes it clear that before sending forth a proclamation obviously calculated to deal a tremendous blow to the industries of the country Dr. Garfield consulted no one but his own subordinates, the President, the Secretaries of War and the Navy and, very perfunctorily, the Secretary of the Treasury. It is the impression here that Dr. Garfield purposely avoided a formal consultation with Director of Railroads McAdoo, as that official was intended to be one of the chief beneficiaries of the order in so far as it promised to relieve the railroad congestion which several weeks of Government control had done little to remove. No one here doubts,

however, that Mr. McAdoo was fully informed of Dr. Garfield's plan. Not a single business man in the country, nor any Government official entitled to speak for the business men, was consulted, notwithstanding the fact, as has been pertinently pointed out by the National Chamber of Commerce, that there was in Washington at the time a war committee of manufacturers and merchants specially appointed to consult and cooperate with the Government in just such emergencies.

Flagrant Defiance

The flagrant defiance of Congress in the promulgation of his order after he knew the Senate had decided to ask for its postponement constitutes the most disquieting feature of this unfortunate episode. The newspapers having published Dr. Garfield's statement that a drastic fuel order would be issued, the Senate Committee on Manufactures, which has jurisdiction of the subject, summoned the Fuel Administrator and catechised him at length, seeking to learn the circumstances under which the order was conceived, its scope and the specific objects sought to be accomplished. The committee made it plain to Dr. Garfield that they did not approve his action, and before he left the witness chair the Senate had taken up for immediate passage a resolution introduced by Senator Hitchcock, a leading Democratic member of the body, requesting the postponement of the order for the period of five days. The

Fuel Administrator was fully informed of the contemplated action of the Senate, but by hastening to his office, after being excused by the committee, he was able to sign and promulgate his order one hour before he received, at the hands of the Secretary of the Senate, a copy of the resolution which had been adopted by a vote of 50 to 19. No such contemptuous treatment of either house of Congress by an executive official is recalled by the most experienced observers of affairs at Washington.

The Real Object

Although Dr. Garfield, in his explanation to the Senate committee, sought to base his order upon the necessity for conserving coal, he was speedily driven from that position and forced to admit that his chief aim was to reduce freight shipments for a period long enough to bring relief to the general railroad congestion. Why, instead of putting a stop to all production, including goods sorely needed throughout the country, an attempt was not made to limit shipments for a

specified period, Dr. Garfield did not explain, although it was made fairly clear from his general statement that he believed he lacked authority to take such action. The Fuel Administrator's further explanation that he planned a general industrial shut-down without notice to the country because he feared that a storm of protests would overwhelm Congress is food for serious thought in view of the current rumors that the policy pursued in this case will be resorted to hereafter whenever, in the opinion of the Fuel Administration, it is necessary to take similar action.

Notwithstanding the suddenness with which the action of the Fuel Administrator was taken, the Secretaries of War and the Navy were afforded an opportunity to compile a list of exempted manufacturing establishments, limited, however, to those engaged upon the most essential kinds of war material. Among the many thousands of manufacturing concerns having Government contracts, this list embraced approximately 150 companies and was promulgated in the form published herewith:

List of Exempted Companies

United States Fuel Administrator Harry A. Garfield made public Jan. 19 a list of industrial concerns which he had exempted from the operation of the order curtailing the industrial use of coal. This list was compiled on information furnished by the Secretary of War, the Secretary of the Navy, and heads of other Government departments. It embraces industrial concerns supplying materials under contract to the Government where these materials are immediately needed and can be delivered without adding to the present congested transportation condition. The concerns are exempted only in so far as they are operating on the articles specified in the list. There are no general exemptions of industry, but other companies named elsewhere in this issue were exempted by local fuel administrators.

The first list of iron, steel and metal-working companies is as follows:

Manufacturers of Arms

Savage Arms Corporation, Utica, N. Y.
Remington U. M. C. C. plants at Bridgeport, Conn., Ilion, N. Y.; Hoboken, N. J., and Swanton, Vt.
Colt's Patent Fire Arms Mfg. Co., Hartford.
Marlin-Rockwell Corporation, New Haven.
Winchester Repeating Arms Co., Eddystone, Pa.
United States Cartridge Co., Lowell, Mass.
National Brass & Copper Tube Co., Hastings, N. Y.
Peters Cartridge Co., Cincinnati.
Western Cartridge Co., Upper Alton, Ill.
Smith & Wesson, Springfield, Mass.
United States Machine Gun Co. (Hopkins & Allen plant), Meriden, Conn.

Manufacturers of Forgings

Bethlehem Steel Co., Bethlehem, Pa.
Midvale Steel Co., Nicetown, Pa.
Hydraulic Pressed Steel Co., Cleveland.
American Car & Foundry Co., Detroit.

For the Manufacture of Emergency Navy Contracts

Curtiss Engineering Corporation, Garden City, N. Y.
L. W. F. Engineering Co., College Point, N. Y.
Aero Marine Plane & Motor Co., Keyport, N. J.
The Burgess Co., Marblehead, Mass.

For the Manufacture of Locomotives

American Locomotive Co. plants at Schenectady, Dunkirk, N. Y.; Pittsburgh, Paterson, Richmond, Va., and Manchester, N. H.
Baldwin Locomotive Works plants at Philadelphia, Eddystone and Burnham, Pa.
Lima Locomotive Corporation, Lima, Ohio.
H. K. Porter Locomotive Co., Pittsburgh.

Seamless Tubes Less Than 1 1/2 In.

National Tube Co., McKeesport, Pa.
Pittsburgh Steel Tube Co., Pittsburgh.
Pittsburgh Steel Products Co., Pittsburgh.
Ohio Seamless Steel Tube Co., Shelby, Ohio.

To the Extent That They Are Working on Emergency Fleet Orders and Emergency Government Work

Bethlehem Steel Co., Steelton and South Bethlehem, Pa., and Sparrows Point, Md.
Midvale Steel Co., Coatesville, Pa., and Johnstown, Pa.
Lukens Steel Co., Coatesville, Pa.
Carnegie Steel Co., Pittsburgh.
Crucible Steel Co. of America, Pittsburgh and Harrison, N. J.
La Belle Iron Works, Steubenville, Ohio.
Otis Steel Co., Cleveland.
Lackawanna Steel Co., Buffalo.
Illinois Steel Co., Chicago.
Jones & Laughlin Steel Co., Pittsburgh.
Donner Steel Co., Buffalo.
Inland Steel Co., Indiana Harbor, Ind.
Central Iron & Steel Co., Harrisburg, Pa.
Forged Steel Wheel Co., Butler, Pa.
Whitaker-Glessner Steel Co., Portsmouth, Ohio.
Youngstown Sheet & Tube Co., Youngstown, Ohio.
Alan Wood Iron & Steel Co., Conshohocken, Pa.
Republic Iron & Steel Co., Youngstown, Ohio.
Brier Hill Steel Co., Youngstown.
McKinney Steel Co., Cleveland.
General Electric Co., Schenectady, N. Y.
Jeffrey Mfg. Co., Columbus, Ohio.
Pittsburgh Transformer Co., Pittsburgh.
Reliance Electric & Engineering Co., Cleveland.
Triumph Electric Co., Cincinnati.
Westinghouse Electric & Mfg. Co., East Pittsburgh.
Oxweld Acetylene Co., Newark, N. J.

Products Intended for the Shipping Board

General Electric Co. plants at Erie, Pa., Schenectady, N. Y., and Lynn, Mass.

Builders of Destroyers

Fore River Shipbuilding Corporation, Quincy, Mass.
William Cramp & Sons Ship & Submarine Boat Corporation, Newark, N. J.
Electric Boat Co., New York.
New York Shipbuilding Co., Camden, N. J.
Newport News Shipbuilding & Drydock Co., Newport News, Va.

Forgings for Destroyers

Camden Forge Co., Camden, N. J.
Allis-Chalmers Mfg. Co., Milwaukee.
Erie Forge Co., Erie, Pa.

Boilers for Destroyers

Babcock & Wilcox Co., Bayonne, N. J.

Condenser Tubes 5/8 In., for Destroyers

American Brass Co., Bridgeport, Conn.
Bridgeport Brass Co., Bridgeport, Conn.

Other War Essentials

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Burks Electrical Co., Erie, Pa.
Electric Machinery Co., Minneapolis, Minn.
Curtiss Engineering Corporation, Garden City, N. Y.
L. W. F. Engineering Co., College Point, N. Y.
Aero Marine Plane & Motor Co., Keyport, N. J.
The Burgess Co., Marblehead, Mass.

Fuel Administrator's Order

The order of Harry A. Garfield, Fuel Administrator, dated Washington, Jan. 17, 1918, provides in the first section that all persons selling fuel shall give preference to necessary current requirements of railroads, domestic consumers, public utilities, by-product coke plants, cantonments, telephone and telegraph plants, shipping for bunker purposes, manufacturers of food and for other public uses.

Section 2 provides that on Jan. 18, 19, 20, 21 and 22 fuel administrators shall divert such fuel as may be necessary to meet the requirements for consumers specified in section 1.

Section 3 provides that on the dates above mentioned and also on each and every Monday beginning Jan. 28, 1918, and continuing up to and including March 25, 1918, no manufacturer or manufacturing plant shall burn fuel or use power derived from fuel for any purpose with the following exceptions: (A) Plants which necessarily must be continuously operated seven days each week to avoid serious injury to the plant itself or its contents may use only such quantity of fuel as is necessary to prevent such injury to the plant or its contents.

Sections (B) and (C) relate to manufacturers of food and (D) to publishers of daily papers. (E) provides that printing establishments may burn fuel on Jan. 18, 19, 20, 21 and 22 to such extent as may be necessary to issue current numbers of magazines and other publications periodically issued.

Section 4 provides that on each Monday beginning Jan. 21 up to and including March 25, no fuel shall be burned (except to such extent as

is essential to prevent injury to property from freezing) for the purpose of supplying heat for:

(A) Any business or professional offices, except offices used by the United States, State, county or municipal governments, transportation companies, public utility companies, telephone or telegraph companies, banks, trust companies, physicians or dentists.

(B) relates to wholesale and retail stores.

(C) to theaters and other places of amusement.

Section 5 relates to saloons and restaurants, and section 6 provides that no fuel shall be burned on any of the Mondays specified for the purpose of supplying power for the movement of surface, elevated, subway or suburban cars or trains in excess of the amount used on the Sunday previous thereto.

Section 7 provides that nothing in the regulation shall be construed to apply to the operation of any mine or plant producing fuel.

Section 8 provides that state fuel administrators are authorized to grant such relief as may be essential to prevent injury to health or to prevent destruction of or injury to property by fire or freezing.

Section 9 provides that the regulation is effective throughout the United States East of the Mississippi River including the whole of the States of Louisiana and Minnesota.

Section 10 provides that any person, firm, association or corporation violating or refusing to conform to the regulations may be liable to the penalty prescribed by the act of Congress dated Aug. 23, 1917.

Failure Predicted

Light, heat and power experts do not hesitate to predict that the "heatless" Mondays program will be an absolute failure both so far as the conservation of coal and the limitation upon freights are concerned. Large amounts of fuel will have to be burned by establishments the processes of which are continuous and which therefore are exempt. Plants shutting down from Saturday night until Tuesday morning will be forced to maintain temperatures to prevent freezing, and in firing up on Tuesday will burn much more coal than is usually consumed on Monday. In thousands of cases also plants will be operated longer hours during the five working days with the result that in such cases there will be no curtailment of fuel or of production.

Numerous inconsistencies have marked the "concessions" granted by the Fuel Administration since the original order was issued. The theaters of the country, for example, have induced Dr. Garfield to permit them to close on Tuesday and to operate on Monday for the avowed purpose of "furnishing amusement to the many thousands compelled to remain idle on that day." Having secured this privilege, the theaters promptly advertised two additional performances, making three each on Monday and on Saturday, the net result being about the same consumption of light and heat as if the houses were open every day. In addition, of course, the theaters have reaped a harvest from the thousands of idle workers, many of whom, receiving no pay on these workless days, could ill afford to spend the money.

Theory vs. Common Sense

The efforts made by the Fuel Administration to close down establishments operating with water power,

notwithstanding the fact that Dr. Garfield frankly admits he has no authority over such concerns, is cited by experts here as another illustration of the extent to which theory has crowded out common sense in the formulation of policies. Of course every pound of production gained through water power means a corresponding saving in fuel; nevertheless, Dr. Garfield has "requested" establishments operating with water power to close down on Mondays "in order to put all competitors on an equality." In such a grave national emergency, sound economics would seem to call for a speeding up of water power establishments regardless of the individual interests of a few competitors.

It has been an easy task for the Fuel Administration to obtain testimonials as to the efficacy of its policy of curtailment; in fact, this phase of the matter has been rather overdone. On the day following the publication of Dr. Garfield's order and before its effect could possibly have been impartially appraised, bulletins from local fuel administrators began pouring in upon the headquarters here describing in glowing terms the relief already obtained. The Committee on Public Information has since been utilized to give publicity to every endorsement of the Garfield order that has been received from any source, while the thousands of protests have been systematically suppressed.

Proof of Patriotism

The almost universal compliance with the Garfield order on the part of manufacturers throughout the country is a fine tribute to their patriotism. Though skeptical that observance of the order would be followed by any results at all commensurate with the dislocation of industry produced by it, producers everywhere have uncomplainingly fallen into line, determined

by their philosophical acceptance of the inevitable to assist in securing at least a psychological advantage from the sacrifice. There have been, however, many expressions of hope that no further experiments along this or similar lines will be attempted. Some gratification has been occasioned by the statement made yesterday by Mr. McAdoo to the Senate Committee on Interstate Commerce that the "heatless" Mondays order may be canceled on Feb. 15 because of improved conditions with respect to transportation and coal distribution.

Numerous publications to the contrary, there is

slight chance that there will be any co-ordination of the forces now engaged in the prosecution of the war that will eliminate or control the Fuel Administration, and there is absolutely no basis for the widely printed suggestion that Congress may legislate the Fuel Administrator out of office. There is a strong disposition on the part of some Senators and Representatives to consolidate the Fuel Administration with the proposed munitions bureau, but the President is known to be opposed to this, and it has already been authoritatively announced that the Chief Executive is "squarely behind Dr. Garfield."

W. L. C.

Chicago Already Had a Serious Shut Down

In Chicago and vicinity the order of Fuel Administrator Garfield was obeyed, except where there were authorized exceptions, but it was done with philosophical resignation and without the slightest show of cheerfulness. The sudden order aroused intense heat and strong condemnatory words were heard on every side. Gradually expressions of opinion became cooler, but the order was still criticized and its justness denied or debated.

The Chicago Association of Commerce, the Illinois Manufacturers' Association and State Fuel Administrator John E. Williams made separate attempts to bring about a modification of the order as applied to the State of Illinois, but their appeals to Washington were fruitless. On Jan. 17 Mr. Williams appointed a committee of business men to pass on applications for exemption made by local industries. The committee ruled that several plants were justified in operating, but it ceased to act and was considerably disconcerted when there came from Washington an official list of plants having war contracts whose operation was authorized. For every plant so specified there are a dozen also having important war contracts whose managers also believe they should be allowed to run.

Blast Furnaces and Steel Works

Blast furnaces which were in operation when the unexpected order was received have continued in blast on the ground that they would suffer if shut down. All of the steel mills having them will operate on Emergency Fleet Corporation orders and some other Government work. The great majority of foundries are closed "as tight as a drum," to use the words of Commissioner A. E. McClintock of the National Founders' Association.

Prior to the order the Illinois Steel Co. was operating its blast furnaces and it continued, of course, to do so, while the exemption permit enabled it to resume certain Government work. Beyond the fact as to the blast furnaces and the statement that the company expected to resume on Government material no information was available.

Ship Steel at 100 Per Cent

The Inland Steel Co. had been practically shut down at Indiana Harbor since Jan. 12, and was making preparations to start in part Jan. 19 when the plan was rendered uncertain by the first fuel order. On the morning of Jan. 18 the company received instructions from Washington to operate 100 per cent on orders from the Emergency Fleet Corporation and other "emergency" Government work, the latter not being specified. Commenting on the order and the resultant situation, G. H. Jones, vice-president and general sales manager, said:

We feel that the drastic order was issued without consideration and without proper consultation with those in a position to know something of the effects. After being idle

for five days we receive an order to be idle for another five at a time when steel is urgently needed by the Government for the successful prosecution of the war. It would appear as if some one has become panic-stricken. The fact that we were ordered to make material for the Emergency Fleet Corporation, after being ordered not to operate, shows that at least one mistake was made. The original order would mean a loss of approximately 1,250,000 tons of steel, figuring an annual production of 40,000,000 tons for the country. We figure we can run our blast furnaces as a continuous operation, also our coke ovens, as these produce fuel. In connection with the ovens is to be considered the gas they make, also the toluol which the Government has practically commandeered. If we can't use the gas in the mills, there is nothing else to do but let it go up in the air, and that is not conservation but waste. Steam coal has bothered us, but we have some located and relief is promised.

The president of a company whose plant has been at a standstill during the past week because of the recent storms, but which now has enough oil on hand to operate for two weeks, was emphatic in his condemnation of the order. He said:

Those in charge of the Fuel Administration do not know how to conduct their department. They have constantly interfered with the law of supply and demand, and are utterly incompetent. They should know that they cannot throw a monkey wrench into a machine and pull it out whenever they feel like it. They said ship everything [coal] to the Northwest before navigation closed. They overdid it, and now we have the result.

Shorter Days Would Save More

A consulting engineer, having to do with steel plants and blast furnaces, expressed the opinion that a larger saving would have been effected by shorter working days than by shutting down for five whole days at once. He pointed out that in a steel plant a considerable quantity of coal must be burned, whether or not it is in operation, also that the fuel administrator had apparently entirely overlooked the fact that much power is derived from blast furnace gas and it might better be utilized. His office force will not work Mondays, but will stay Saturday afternoons to handle pressing work.

Criticism Depreciated

Joseph Michaels, of the Hyman-Michaels Co., a member of the sub-committee on iron and steel scrap of the American Iron and Steel Institute, was less inclined to criticize than many others:

I believe the people in Washington are so much more in touch with definite information on this subject than are any individuals, singly or collectively, that I question the judgment of agitating the question. I believe that criticism is unjustified, for the reason that the weather situation is unprecedented. It is our duty to disturb the Administration as little as possible, and I would say further that a temporary complete cessation of business is better, in my judgment, than constant and intermittent disturbances. The fact that every one is treated alike is to be commended, for if the order was necessary it was right that it should apply to all. No one likes sectionalism. I believe that something drastic had to be done, but it is too bad that something was

(Continued on page 292)

Handling Costs of Winchester Plant*

The Big Place Given the Charting of Statistics—How Costs Are an Open Book to Those Responsible for Expenditures

BY W. E. FREELAND
(With Supplemental Plate)

FEW industrial organizations have carried graphical charting of statistics as far as the Winchester company. Over 7000 charts are regularly plotted in the statistical department, 2500 of these being posted weekly and the remainder monthly. Daily charts, of which there is a large number, are plotted in departmental offices with the advice and guidance of the statistical engineer. A single instance will demonstrate the value of the work of the department. At an expense of little more than \$12,000 a year for the maintenance of the department, a single result that has accrued from its work has been the cutting in half of the inventory, a matter of several millions of dollars net gain.

The Statistical Engineer

The statistical engineer has two principal assistants, one in charge of research work, the other in charge of routine. The latter assistant has a staff of one man and seven women. All the actual plotting is done by women and the volume of work enables its subdivision so that each woman becomes a specialist upon a particular part of the plotting. At present it costs less than \$1 a year to maintain a monthly chart with three curves and the supporting numerical data, and considerably less than \$4 a year to maintain a weekly chart. The centralization of all statistics in this department is for three purposes: standardization of charts, economy of collection and presentation of data, and economy of use.

SPECIAL FORM OF CHARTS USED

To secure the most flexibility between subjects and years, each chart, with minor exceptions, is plotted with the curves of one subject for one year. The charts are uniform in size. By placing the charts side by side the record of any subject for a period of years can be read and by placing one above another the seasonal changes are quickly ascertained. By placing two or more charts directly over one another before a strong light, as in a simple form of light box, direct comparisons are quickly made. The charts are so designed that weekly and monthly charts are directly comparable. Where ratio charts are not employed, the scales are plotted to make the slopes not only show the dif-

ferences correctly but also the percentages. A carefully worked-out scale selection chart and plotting guide has been evolved which, in connection with the usual engineering scales, simplifies the work of plotting and insures standardization of the charts.

Production, costs, sales and finance furnish the subjects for most of the charts but nearly every conceivable kind of useful record from labor turnover to coal consumption is likewise plotted. Some astonishingly accurate prophetic curves have been plotted, notably of cash receipts, cash disbursements and balance in bank for one year ahead. These curves are redrawn approximately every six weeks and are steadily increasing in accuracy as past data accumulate.

A GUIDE TO FOREMEN

The cost department makes an intensive effort to analyze indirect expense as a guide to the executives and foremen directly responsible for such expenses. About 3000 such accounts are maintained in the cost division and two-thirds of these are charted by the statistical department. A common form of chart shows a curve for monthly expenditures, a curve for the monthly accumulation of the year to date and a curve showing the total expenditure of the last twelve months.

A chart is employed to show the ratio of the total controllable expense of the plant to the direct labor; in other words, the ratio of the total controllable expense to the plant activity. Another such chart shows the ratio of total controllable expense to the direct labor of the gun and cartridge departments; that is, the ratio of total controllable expense to plant productivity. From these two charts it is possible to compare the plant activity with the production activity and thereby control the non-productive expenses (tools, etc.) when production declines or increases.

Contrary to the practice of many industrial concerns every effort is made to keep executives and their subordinates informed of the expenses for the creation of which they are responsible. This is accomplished in two ways: by direct contact with the individual through the activities of the cost service section of the cost division (to be described later) and through the projection of the charts by means of a reflecting lantern before departmental groups, as here shown. For this purpose the statistical department has a specially equipped room where the charts are thrown on a screen, explained by the statistical engineer, or some other high ex-



A monthly conference is held of cartridge department supervisors and general foremen regarding shop expense, work in process, etc. These men comprise the executive operating force for over 5000 employees. Charts are projected upon the screen and at the lantern may be noted the chart file

*Third article on the organization and management of the Winchester Repeating Arms Co., New Haven. The first, printed in the issue of Jan. 3, covered general features; while the second, in the issue of Jan. 17, took up the unusual organization of the engineering departments.

ecutive, and discussed by the group. The effect has been almost as interesting and as direct as has been described in the case of the reduction of inventory. The production executives no longer think of work in process in terms of boxes of work but in terms of thousands and millions of dollars involved in the product in process. The necessity for the maximum of output and for the minimum of controllable expense is thus brought home to every man in a most forceful way. A direct appeal is made to each responsible man because of his very natural desire to keep among the leaders and to make a showing so favorable that his delinquencies will not be made a subject of discussion at the group meetings. The result is an effort to save in every controllable expense from idle machine hours to carelessness in use of supplies and equipment.

The Cost Department

The Winchester plant is divided into 185 shops or divisions. As each of these have from 15 to 20 indirect expense accounts, the total number of controllable expense accounts maintained by the cost department are in excess of 3000. While this may seem like an abnormally large number of accounts it is no more than is needed to furnish the shops with the information that will be useful to them in reducing controllable expense. The department is in charge of an engineer, and, although it is fundamentally and essentially a part of the general accounting, because of the intimate way in which costs and system react, it is under the general charge of the industrial engineer.

Stress is laid on the reasonably detailed analysis of indirect expense for two reasons: the indirect expense is usually greater than the direct expense; the emphasis naturally placed on production tends to distract attention from the economies possible in indirect expense. Analyses, as far as possible, are drawn along a distinct line of authority for expenditures. Actual expenditures having been determined according to the line of responsibility, the results are brought very distinctly home to that part of the organization responsible for them. When one shop has to spend money for which another shop creates the necessity, the result is brought home to both of them. Items for belting, belting repairs, electric lamps, etc., are often of this class.

The production organization collects and verifies the field data. The shop offices are held responsible for time and quantity records. Overhead costs are not distributed to departments first but to shops, almost wholly on the basis of direct labor. Protection expense and a few other items of over-

head expense are distributed to the shops on a area basis. The whole process of securing time figures has been so simplified and is handled with such speed that the total payroll is checked against the total time analysis within 48 hr. of the close of the week, and this makes possible the payment of the entire force within a single day, a rather unusual proceeding for a shop crew of over 15,000 hands.

COST SERVICE SECTION

A unique feature of the cost department is the cost service section. This is a group of six men whose business it is to explain to the heads of the various shops any features of the monthly expense reports which may not be clear to them and to assist the foremen to secure better results from their expenditures. The cost service section also investigates items of expense which show sudden increases. A monthly report of shop expense, here shown, is made to foremen and accompanying this is a form which invites questions about the various items. As has been mentioned, the statistical department

works with the cost service section in presenting the question of expenses to the operating officials, both groups laying stress upon the fact that their chief aim is to be of service and that their attitude is not one merely of criticism. The cost service section attempts to anticipate the questions which may come from the study of the statistical charts and to have the facts in hand that will help a foreman to understand and to remedy, if possible, any rising costs. In the group meetings

SHOP EXPENSE REPORT			
ACCOUNT SYMBOL	DESCRIPTION	CURRENT MONTH	LAST MONTH
Total Payroll			
Average Number of Employees			
Average Earnings per Day			
Average Rate per Hour			
A Indirect Labor			
B Belting Repairs			
C			
D			
E Electric and Other Lighting Repairs			
F Furniture and Fixture Maintenance			
G Gages, Repairs and Replacements			
H			
I			
J			
K			
L			
M			
N			
O			
P Power Transmission Engines			
Q Breakdown of Motors			
R Supplies			
S Tools, Repairs and Replacements			
T			
U			
V			
W			
X			
Y			
Z Building Repairs			
Total Controllable Expense			

TO COST SERVICE SECTION
COST DIVISION

PLEASE FURNISH DETAILS ON THE ATTACHED CHARTS
FOR THE MONTHS
MATERIALS
LABOR
MANUFACTURE

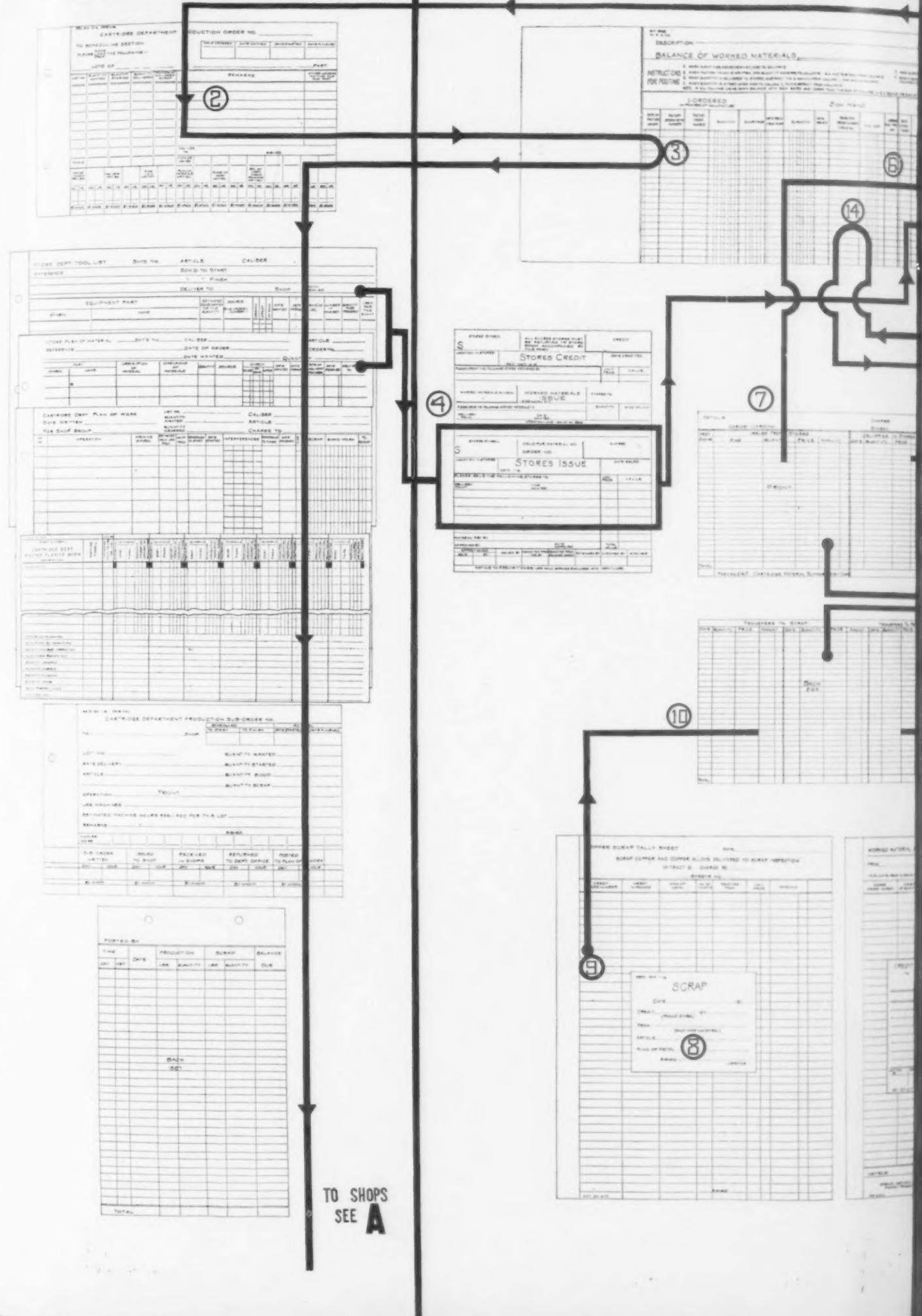
A monthly report of shop expense goes to each foreman and he is given a form for inquiring about items which seem to demand some elucidation

where the charts are dissected, fully as much emphasis is laid on the good points of a report as on the bad points; more dependence is placed upon the spirit of emulation than upon fault-finding to bring about improvement where needed.

It can be seen that costs are an open book to the men responsible for expenditures. When occasion arises, the intimate figures of the company's balance sheet are laid before the important executives of the engineering and production staffs and the importance of exceptional figures explained by the general manager. All this work of cost explanation and financial enlightenment has been an important factor in the success of the organization. It brings about a realization on the part of production executives of the size of their jobs from a financial viewpoint. A general foremen's indirect expense may run into thousands of dollars each month when he is thinking in hundreds. He has always been pushed to produce; from the expense reports he gets a new viewpoint and sees that he must produce economically. Generally the first effect is to startle; the second effect is to awaken his in-

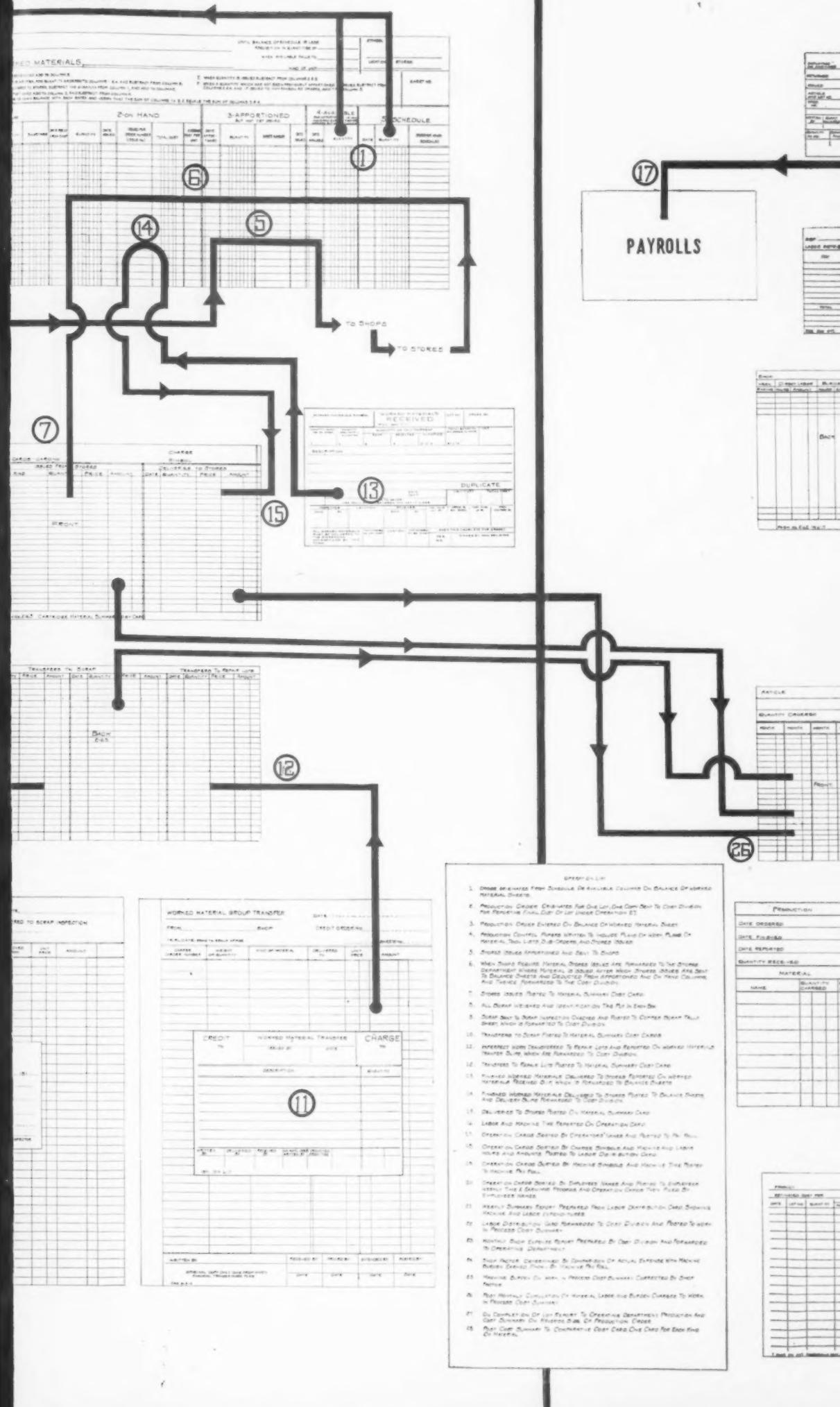
PRODUCTION ORDERS

MATERIAL



Plan and Forms Used to Secure the Cost of a

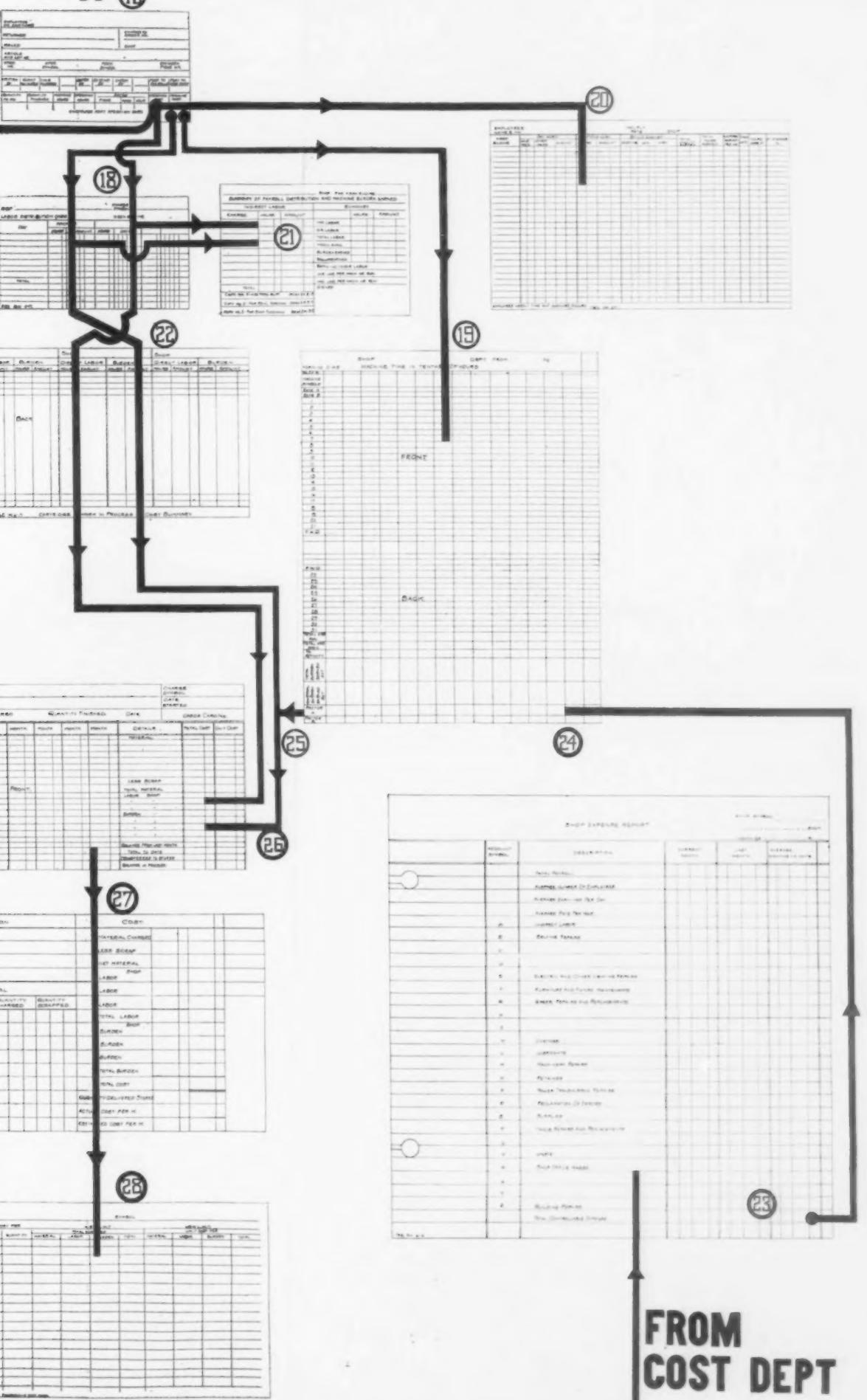
TERIAL



the Cost of a Lot of Cartridges, Winchester Repeating

LABOR AND BURDEN

A 16



FROM COST DEPT

ting Arms Co., New Haven, Conn.



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HOW LOT COSTS ARE SECURED

In the supplemental plate is shown the complete set of forms used to secure the cost of a lot of cartridges. A definite knowledge of costs is necessary in a department handling about 500,000 pieces of work a day and in which there is necessity for keeping the work flowing through a thin, very rapid stream, owing to the relatively high cost of raw materials and the volume and value of scrap. The value of the raw materials drawn from stores is over 75 per cent of the cost of the shed ammunition and the value of the scrap, most of which is put back into process, is nearly four times that of the direct labor cost.

In originating a cartridge order, the schedule of available columns (1), on the supplement, of the worked materials sheets in the balance of stores department are first consulted. The circled numbers incidentally refer to the successive steps in the operations of making production orders, materials issues and credits, and labor and burden papers of various kinds. A production order (2) is made out, one copy sent to the cost department for reporting the final cost of the specific lot. This order is entered (3) on the worked materials sheet of the balance of stores division. The arrows then show the steps in filling out a tool list, plan of material, plan of work, master plan of work, and production order. This set of production papers control all actual steps of production.

Stores issues originate from the tool list and plan of material (4) and then are sent to the balance of stores division where proper entry (5) is made in the apportionment column of the worked materials sheet. The stores issue sheets are then turned to the shops and when materials are received, they are sent to the stores department. After materials are issued, these sheets are again sent to the balance of stores division for entry (6) in the apportionment and on-hand columns of the worked materials sheet and forwarded from there to the cost department where they are posted (7) to a material summary cost card.

All scrap is weighed and an identification card is put in each box. The scrap is sent to the scrap collection section where it is checked and posted to the copper scrap tally sheet (9), which is forwarded to the cost division. The proper entry is then made (10) on the back of the material summary cost card. Imperfect work is transferred to repair lots, reported on a worked-materials transfer slip (11) and entered by the cost division on a worked-materials group transfer sheet. The entries on this sheet are then transferred (12) to the back of the material summary cost card.

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Labor and machine time is reported on an operation card (16) and these cards are sorted in the shop offices to operators' names and posted (17) to payroll. The operation cards are then re-sorted by charge symbols and machine and labor hours

and the amounts posted to the labor distribution card (18). The operation cards are again sorted by machine symbols and the machine time posted to the machine payroll (19). The operation cards are then sorted by employees' names and posted to employees' weekly time and earnings records (20) and the cards are then filed by employees' names. From the labor distribution cards a weekly summary report is prepared which shows the machine and labor expenditures (21).

The labor distribution cards are forwarded to the cost division and posted (22) to the back of a work in process cost summary. A monthly shop expense report (23) is prepared by the cost department and sent to the shop in which the expenditures originated. A shop factor, determined by a comparison of the actual expense with the machine burden earned is shown (24) on the machine payroll. The machine burden on the work in process cost summary is then corrected (25) by applying the shop factor. The cumulation of material, labor and burden charges is posted monthly (26) to the work in process cost summary. On completion of a lot a report is made to the operating department on the back of the production order (27) of the production and cost summaries. The cost summary is posted (28) to a comparative cost card, one card for each kind of material.

Finding on Cincinnati-Chattanooga Rate Reaffirmed

WASHINGTON, Jan. 22.—In a final report upon the long pending case of the Casey-Hedges Co., et al., vs. Cincinnati, New Orleans & Texas Pacific Railway Co., the Interstate Commerce Commission has upon rehearing affirmed its former finding that the rate of 23 cents per 100 lb. on various iron and steel articles, including boiler tubes, structural material, bar iron, bar steel, wrought iron and steel pipe, iron and steel plates 16 gage and heavier, and iron and steel rivets, in carloads, from Cincinnati, to Chattanooga, Tenn., was unreasonable and has prescribed for the future a maximum rate of 19 cents, minimum 36,000 lb. The rehearing of this case was had at the instance of the railroad company and the Southern and Nashville, Chattanooga & St. Louis Railways and the Illinois Central, Mobile & Ohio, and Louisville & Nashville railroads were made parties defendant at their request.

This traffic also moves from Cincinnati to Chattanooga through Nashville, Tenn., over the Louisville & Nashville and the Nashville, Chattanooga & St. Louis railroads, a distance of 448 miles, over which route the 23-cent rate still applies. In explanation of the interveners' interest in the proceeding it was contended that the continuance of the 19-cent rate over the line of the original defendant will not only require that the carriers parties to the route through Nashville meet that rate if they are to participate in the traffic, but that as the rates to Chattanooga from the Ohio River crossings, Cincinnati to Cairo, Ill., inclusive, are and for many years have been the same, a 19-cent rate to Chattanooga will also require the establishment of that rate from such other crossings to Chattanooga. The intervening carriers contend that the former record did not support a finding that the 23-cent rate was unreasonable; that subsequent to the date of the original hearing, various changes were made in their rates in this territory, including a readjustment of rates to numerous points in compliance with *Fourth Section Violations in the Southeast*, 30 I. C. C., 153; and that in view of changed conditions, a different conclusion should now be reached.

The Urbana Mfg. Co. has been organized at Urbana, Ohio, with a capital of \$50,000 to manufacture sheet metal specialties.

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to distract attention from the economies possible in indirect expense. Analyses, as far as possible, are drawn along a distinct line of authority for expenditures. Actual expenditures having been determined according to the line of responsibility, the results are brought very distinctly home to that part of the organization responsible for them. When one shop has to spend money for which another shop creates the necessity, the result is brought home to both of them. Items for belting, belting repairs, electric lamps, etc., are often of this class.

The production organization collects and verifies the field data. The shop offices are held responsible for time and quantity records. Overhead costs are not distributed to departments first but to shops, almost wholly on the basis of direct labor. Protection expense and a few other items of over-

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the most approved manner and that the government supplied all the tractors and other equipment necessary to complete the batteries in September, October and November, the War Department having given assurance that it would be able to send to France all the tanks and trucks needed for the equipment. The supplies to be furnished are to be supplied to the American troops

W. L. C.

Radial Grinding Machine

for a large proportion of the work on a grinding wheel and flexible shaft is to be done by the Mumford-Dixon Co., Hanover, Pa.,

being moved over the floor, since the arm can be used as a guide, similar to a wagon tongue.

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WASHINGTON, Jan. 22.—Some interesting disclosures regarding the co-operation of the French Government with that of the United States in supplying machine guns, both heavy and light, and various types of field artillery and ammunition for the use of the American forces in France are made in a statement submitted to the Senate Military Committee by Major General William Crozier, Chief of the Ordnance Bureau of the War Department. General Crozier's statement includes extracts from official correspondence which make it perfectly clear that the French Government, so far from making sacrifices to furnish this material, as has been alleged, actually took the initiative in offering to supply the American troops, and in doing so was moved by three important considerations: first, the desirability of securing the co-operation of American troops at the earliest possible date; second, the importance of standardizing the artillery and ammunition of the American and French forces operating in the same war zones; and third, the necessity from a financial as well as an industrial standpoint of keeping in operation the enormous gun factories developed by the French Government to provide the initial requirements of its army, the capacity of these establishments far exceeding the current wastage of the war.

Invitation Extended

In the early part of the summer of 1917 the French High Commissioner in Washington, Andre Tardieu, extended to the War Department a formal invitation from the French Government to place orders for artillery and ammunition in France and especially for the manufacture of a supply of 75 mm. field guns and 155 mm. howitzers corresponding respectively to 3-in. and 6-in. guns, sufficient to equip all American troops that could be sent to Europe in 1917 and 1918. Following the conclusion of this arrangement, the French Commissioner prepared for the French press a bulletin, the terms of which make it quite obvious that the placing by the United States of orders for French artillery was regarded as of great importance to the gun factories of France and in no sense involved a sacrifice of the efficiency of the French army. After describing the development of artillery production in France to the point at which a large surplus was being manufactured, the statement outlines the negotiations with the War Department.

"These negotiations," the High Commissioner says, "were characterized by two ideas. On the one hand, the American Government wished to adopt the quickest solution, in order to realize in the shortest time the complete armament of its forces. On the other hand, with great foresight, they attached particular importance to realizing, for the American and the French armies, called to fight on the same battlefields, uniformity of munitions, of such capital importance from a technical point of view."

Reasons for Action

"In view of these two desired aims, the French High Commissioner was able, thanks to the development since 1916 of the machine equipment of our war munitions factories, to furnish General Crozier with a detailed plan of industrial collaboration, which, by the united efforts of the French and American industries, will assure the complete realization of the American program. The double certainty of rapid production and uniformity of munitions, decided the United States Government, despite the incontestable value of its own material, especially that of the 3-in. field gun, of which the superior qualities are universally recognized, to adopt our 75 mm. and our short 155 mm."

"The negotiations on these lines were rapidly completed; at the end of somewhat over one month they were concluded this week by a complete understanding, fixing the quantity and the price of the material to be furnished. This understanding, susceptible of important further developments, is a precious proof of the esteem in which the most powerful industrial country in the world holds our engineers and our mechanical constructors. It has also a practical bearing of great value.

"From the military point of view, it is evident that uniformity of type of guns and munitions for armies fighting on the same battlefields is an appreciable guarantee of safety and efficiency. The supply and the volume of fire are thereby equally facilitated. Unity results spontaneously from identity of weapons. Finally all tactical results, obtained by the experience of three years of war, are, without previous adaptation, assimilated by the American Army.

"From the industrial viewpoint the unity of effort created between the manufacturing plants of the two countries will produce happy results without precedent, not only during the war, but also subsequently. Common action provides the best means of mutual acquaintance and for preparation of the close co-operation which it is desired to organize for the future.

"From the financial standpoint it is possible to hope that the purchase by the United States of French artillery material will create an improvement in exchange, which under the existing relations of America and her European Allies is as much to be desired by the United States as by France."

Under the terms of the agreement referred to the French Government began deliveries in September, 1917, of 155-mm. field guns of the Filloux type, at the rate of 12 guns per month, and also delivered 48 Schneider howitzers prior to Oct. 15, 1917.

British Also Co-operated

The British Government also co-operated in the artillery equipment of the American forces, and the English and French Governments together agreed to provide an adequate supply of Hotchkiss heavy machine guns and of Chauchat light machine guns. The spirit of both the British and French officials in supplying this equipment to the American forces and their ability to furnish it in excess of their own requirements are clearly reflected in a cablegram addressed to the Secretary of War on Dec. 5 by General Tasker H. Bliss, Chief of Staff, who was then in London, in part as follows:

In order to insure the equipment with artillery and ammunition of the American troops as fast as they arrive in France the Minister of Munitions of France and England and Pershing representing the United States, have exhaustively examined the situation and adopted the following resolutions for their respective governments: "The representatives of Great Britain and France state that their production of artillery (field, medium and heavy) is now established on so large a scale that they are able to equip completely all American divisions as they arrive in France during the year 1918 with the best make of British and French guns and howitzers. . . . With a view, therefore, first to expedite and facilitate the equipment of the American armies in France and second to securing the maximum ultimate development of the ammunition supply with the minimum strain upon available tonnage, the representatives of Great Britain and France propose that the American field, medium and heavy artillery be supplied during 1918 and as long after as may be found convenient from British and French gun factories.

The official correspondence also shows that the artillery equipment supplied the American forces was

motorized in the most approved manner and that the French Government supplied all the tractors and other motor vehicles necessary to complete the batteries delivered in September, October and November, the United States War Department having given assurances that it would be able to send to France all the caterpillar tractors and trucks needed for the equipment of all batteries supplied to the American troops after Dec. 1.

W. L. C.

Portable Radial Grinding Machine

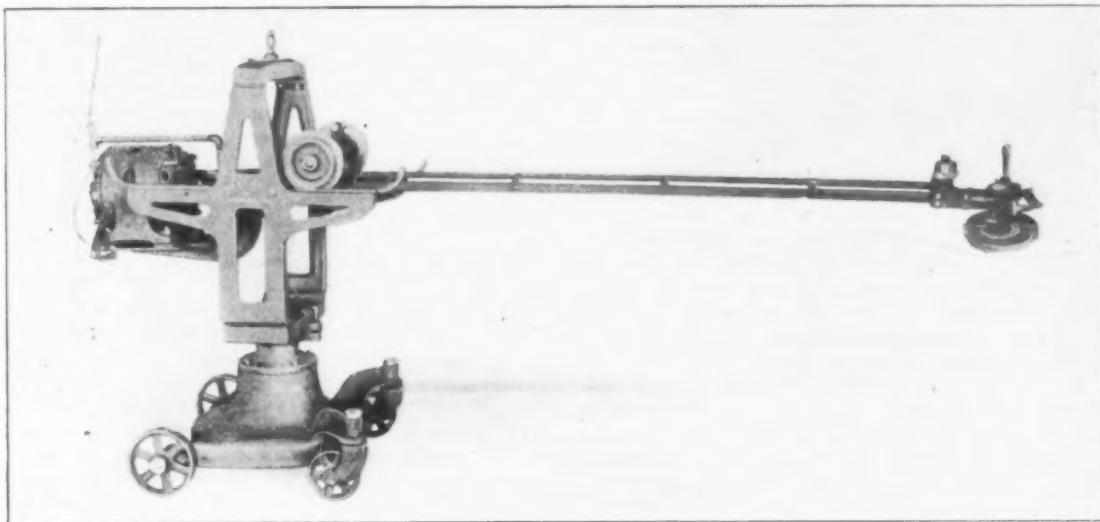
As a substitute for a large proportion of the work formerly done by a grinding wheel and flexible shaft combination, the Mummert-Dixon Co., Hanover, Pa., has brought out a portable radial grinding machine. A wheel which is 8 in. in diameter is employed and is driven at a speed of 2800 r.p.m. by a 1-hp. electric motor. The machine is primarily intended for general light grinding and buffing work, and the wheel can be raised

being moved over the floor, since the arm can be used as a guide, similar to a wagon tongue.

In addition to the machine illustrated two larger sizes are built. One of these is designed to mount a wheel 14 in. in diameter with 2-in. face, while the other will mount wheels 3 in. wide and either 18 or 20 in. in diameter.

Progress at Shipyards on Newark Bay

The Federal Shipbuilding Co., Kearny, N. J., has begun the erection of the following buildings for its new shipyard: Plate shop, \$400,000; joiner works, \$30,000; sheet-metal plant, \$20,000; boiler shop, \$170,000; paint shop, \$5,000; store buildings, \$32,000. It is building an electric power plant to cost \$60,000. Other buildings, for which plans are now being prepared, include a machine shop, forge shop, foundry and rigging shop. It is expected to have the plant completed and ready for operation in May. The works consist of ten shipways, now completed, and construc-



A Portable Radial Grinding Machine Equipped with an 8-In. Wheel Has Been Developed as a Substitute for an Ordinary Grinding Wheel Employing a Flexible Shaft

as high as a man can reach or brought down to the floor, in addition to being turned into any position between a plane at right angles to the floor and one parallel with it, as well as having a slight longitudinal movement.

The machine is a self-contained unit and is readily portable. The grinding wheel, which is 8 in. in diameter, with a 1-in. face, is driven by a motor mounted at the rear end of the tubular arm. This motor which receives its supply of current from an adjacent lighting socket is coupled to a shaft running through the tubular arm to a set of hardened steel spiral gears in the head. These gears are inclosed in an oil tight gear and increase the speed from 1800 to 2800 r.p.m. The head, arm and motor are carried on a two-wheel ball bearing trolley which rolls back and forth on a steel track for a distance of 30 in. A rack and pinion on each side of the carrying frame is relied upon to keep the trolley in alignment. The motor tends to balance the head, and as it is mounted below the center of the trolley shaft, keeps the whole weight in equilibrium when the work man releases his hold. The bolster of the frame carrying the trolley is mounted on the upper end of a trunnion which turns in the base. In this way the arm and the grinding head can be turned entirely around the base, thus giving a full radial grinding machine. It is also possible to twist or turn the head completely around so that the top, either side or bottom of a casting can be ground.

When the machine is being moved the trolley can be locked in the middle of the frame, and by inserting a lock pin the bolster can be locked to the base, so that it will not turn radially. This arrangement, it is pointed out, will be found advantageous when the machine is

being moved over the floor, since the arm can be used as a guide, similar to a wagon tongue.

In addition to the machine illustrated two larger sizes are built. One of these is designed to mount a wheel 14 in. in diameter with 2-in. face, while the other will mount wheels 3 in. wide and either 18 or 20 in. in diameter.

The Submarine Boat Corporation, Bayonne, N. J., has practically completed its new yards at Port Newark Terminal. It is said that with 76 days' actual working time, the plant is 95 per cent complete. The works will be used for the immediate construction of 150 steel vessels, of 5,000 tons capacity each, one-third of which are expected to be completed by Nov. 1, 1918. Ten shipways have been constructed and necessary shop and construction buildings. Owing to delay in securing materials through transportation congestion, there has been but little fabrication of ships accomplished at the plant since driving the first rivet at formal exercises on Dec. 5. With betterment in the situation and the arrival of materials, it is expected to commence active construction work at once and rush to completion. B. L. Worden is general manager.

Ford, Bacon & Davis, engineers, announce the formation of the Ford, Bacon & Davis Corporation, organized for the purpose of conducting a general contracting business, with particular reference to industrial, public utility and power plants, steam and street railroads, docks, steamship and railway terminal facilities, subways, tunnels, hydro-electric and irrigation projects. In effect this means the continuance in corporate form of construction work which heretofore has been handled by the firm direct. Its headquarters are at 115 Broadway, New York, with offices at New Orleans and San Francisco.

IRON ORE IN 1917

Very Little Change in Output of Mines Compared with 1916

The iron ore mined in the United States in 1917 amounted to about 75,324,000 gross tons, compared with 75,167,672 tons in 1916, an increase of 0.2 per cent. The figures for the two years are so nearly the same, however, that when the final returns are received from all the producers the actual quantity mined in 1917 may prove to have been less than that mined in 1916. The shipments from the mines in 1917 are estimated at 75,649,000 gross tons, valued at \$236,178,000, compared with 77,870,553 tons, valued at \$181,902,277 in 1916, a decrease in quantity of 2.9 per cent, but an increase in value of 29.8 per cent. The general average value of the ore per ton at the mines for the whole United States was therefore \$3.12 in 1917, as compared with \$2.34 in 1916. The stocks of iron ore at the mines apparently decreased from 10,876,352 gross tons in 1916 to 10,560,000 tons in 1917, or 2.9 per cent.

To obtain these statistics preliminary figures received from producers of nearly 95 per cent of the normal output of iron ore were compiled under the direction of Ernest F. Burchard of the United States Geological Survey, Department of the Interior, and was supplemented by estimates covering the remainder of the output.

About 85 per cent of the ore mined in 1917 came, as usual, from the Lake Superior district, which mined about 63,964,000 gross tons and shipped 64,275,000 tons, these quantities representing a very slight increase and a decrease of 3.2 per cent, respectively, compared with 1916. The shipments of iron ore by water from the Lake Superior district, according to figures compiled by the Lake Superior Iron Ore Association, amounted in 1917 to 62,498,901 gross tons. It thus appears that the iron-mining industry in the Lake Superior district has been able to bear the strain of the war demand, but not to duplicate the great record of ore shipments made by Lake in 1916, which amounted to 64,734,198 gross tons. The slight falling off, it is understood, was due to less favorable weather for shipping early and late in the season of 1917 rather than to inability of the Lake fleet to handle the ore mined.

The South mined and shipped more than 8,100,000 tons of iron ore, the bulk of which was produced in the Birmingham district, Alabama, but the iron mines of Georgia, Tennessee, North Carolina, and Virginia contributed about 1,400,000 tons to the total.

The northeastern States—New Jersey, New York and Pennsylvania—increased their production slightly as compared with 1916 and shipped to blast furnaces approximately 2,446,000 tons of ore. This quantity, however, represented a decrease of 4.1 per cent as compared with the shipments in 1916.

Colorado, New Mexico and Wyoming, the principal iron-ore producing States in the West, are estimated to have mined and shipped approximately 666,000 tons of iron ore, compared with 717,660 tons in 1916, a decrease of 7.2 per cent.

Other States, such as California, Connecticut, Iowa, Maryland, Massachusetts, Missouri, Nevada, Ohio, Utah and West Virginia, in which there are small iron-mining operations, are estimated to have shipped about 144,000 tons of ore, compared with 134,002 tons in 1916, an increase of 7.5 per cent.

The imports of iron ore for the 11 months ending Nov. 30, 1917, according to the Bureau of Foreign and Domestic Commerce, Department of Commerce, amounted to 913,500 gross tons, so that probably the imports for the whole year reached 988,500 tons, compared with 1,325,736 tons in 1916.

The Sizer Forge Co., Buffalo, announces the opening of a sales office in Pittsburgh at 908 First National Bank Building. D. A. Stuart has been appointed district manager and will be in charge of sales in the territory consisting of Pittsburgh and vicinity.

INCREASING STEEL OUTPUT

Manufacturers of Canada Hold Meeting—Japan's Program

TORONTO, ONT., Jan. 21.—Two weeks ago the steel manufacturers of Canada were called into a conference at Ottawa. The leading manufacturers of Canada were present and the situation was fully explained to them. The manufacturers expressed an earnest desire to cooperate in every possible way, and, after conferring with the War Committee of the Cabinet, they met and discussed the question of an increased production of steel. As a result of these conferences, it is announced that the manufacturers have undertaken to increase the production of steel 20 per cent over last year, provided the raw materials are available as usual. This announcement is one which will be welcomed alike by the Imperial Munitions Board and the Canadian railways. The immense amount of steel required for the manufacture of munitions has prevented the railways from securing rails from Canadian mills. The output of Canadian steel plants has not been sufficient to meet the requirements of the munitions manufacturers and the railways, with the result that the latter have stood aside. While in some cases they have contracts with the steel companies for rails, they have waived their claims to permit the fullest possible manufacture of munitions. The railways, however, could not longer continue in this position, as their maintenance required a supply of rails, it therefore became necessary for the Government to deal with the question, and as a consequence the output of steel in the Dominion will be increased by 20 per cent.

E. F. Crowe, Canadian Trade Commissioner at Yokohama, in a report to the Department of Trade and Commerce, Ottawa, states that Japan is launching upon a shipbuilding program which will involve the construction of 250 ships per year. He states that at the end of September last there were in Japan 113 shipbuilding slips owned by 42 firms. In each slip a ship of 1000 tons can be built. This is more than three times the number of ships owned by Japan before the war. Many more are also under construction, and 24 are expected to be completed in the near future. When all these berths are put into full operation, subject to a supply of iron and steel materials, Japan will be in a position to turn out more than 250 ships, aggregating 1,000,000 tons yearly. This is more than three times Canada's maximum shipbuilding proposals as recently announced.

An order winding up the Canadian Bartlett Automobile Co., Toronto, Ont., with a factory at Stratford, Ont., has been made by Justice Latchford. N. L. Martin is named as interim liquidator and a reference is directed to J. A. C. Cameron, Master in Chambers. The company was launched in 1913 with a capital stock of \$10,000,000. R. C. Bartlett, Stratford, a director and shareholder to the extent of \$1,000,000 in the company, is petitioner. He states that the company owes about \$8,500, including \$7,000 in wages.

New York Foundry Men Elect Officers

At the annual meeting of the Associated Foundry Foremen of New York and vicinity, on Jan. 12, officers for 1918 were elected as follows: President, Walter H. Hofmann, foundry superintendent of Richey, Brown & Donald Co., Maspeth, Long Island; vice-president, Robert Walker, foundry superintendent of Abendroth Brothers, pipe manufacturers, Port Chester, N. Y.; secretary and treasurer, Walter F. Kaine, president of T. P. Kelly & Co., Inc., New York, manufacturer of foundry supplies. Charles Ashurst, superintendent of Fuchs & Lang Mfg. Co., and John J. Jung, treasurer of Charles A. Lefferts & Co., Brooklyn, have been elected to the board of directors.

The Columbus Forge & Iron Co., Columbus, Ohio, has received a third Government order for 2000 anvils.

Reduced By-Product Coke Output

For the first time the U. S. Geological Survey presents weekly statistics of the by-product coke industry of the United States, analyzing working conditions at 41 plants and reporting the causes of failures to realize maximum output. Seven other plants reported capacity and production, but failed to specify causes of loss. The total includes 48 of the country's 52 by-product plants which in 1917 produced 93 per cent of the entire output. The report says:

The 48 plants produced during a 7-day period in late December 80.4 per cent of their maximum capacity. The loss of 19.6 per cent affects not only the output of munition steel but of benzol and toluol and ammonia as well, which are the bases of modern high explosives.

The 41 plants reporting causes of loss produced 338,482 tons of coke from 468,154 tons of coal charged, a recovery of 72 per cent. The production, however, amounted to only 82.4 per cent of the maximum capacity, defined as "the maximum quantity of coke of the grade desired by the operator which can be produced when all conditions are favorable with all ovens active." The plants reporting thus failed to realize in actual output 17.6 per cent of their maximum capacity.

The dominant factor limiting production was reported to be lack of coal. Losses attributed to this cause amounted to 13.8 per cent of the maximum capacity. Losses due to labor shortage and strikes were insignificant, constituting but 0.2 per cent. A certain loss due to necessary repairs may be considered as unavoidable, yet for all plants reporting the output lost for this cause amounted to only 1.6 per cent. The loss of 2.1 per cent attributed to "all other causes" was largely the consequence of the low grade of coal used by plants unable to secure fuel of the quality desired.

In certain states the coal shortage was much more acute than in others. Plants in Indiana lost 26.8 per cent of their potential output through lack of coal. Illinois, though less severely affected, lost 13.6 per cent of its full capacity from the same cause. New Jersey, New York and Ohio all suffered losses in excess of 20 per cent of their capacity.

German Steel Dividends Enormous

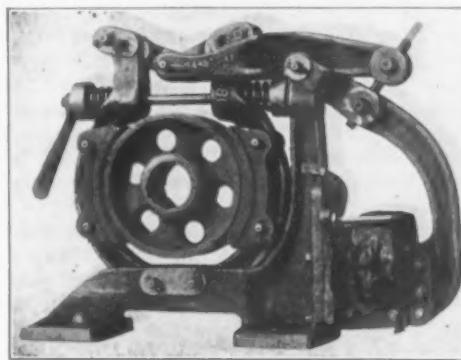
Almost without exception the German steel companies have declared enormous dividends since the war began, chiefly because, as the London *Ironmonger* points out, the government has consented to pay them exceedingly high prices for their deliveries of war materials. The prices allowed by the authorities have been severely criticised in financial circles on the ground that they have thrown an enormous burden upon the whole country for the benefit of one particular section of manufacturers—a section which is the great bulwark of the military party and the annexationists. These criticisms have been so insistent that Director Beukenberg, of the Phoenix Steel Works, replied to them at the recent annual meeting of his company. It is true, he said, that the steel companies have made large profits and that these have led to attacks upon the leaders of the industry and upon the price policy of the authorities; but the reason for the high scale of prices is that a few of the works are not particularly well equipped and cannot turn out their products at competing rates under ordinary conditions. Before the war these works either paid no dividends at all or their profits were very small. When the authorities began to want the whole of their output they deliberately fixed the prices so that even these poorly equipped works should be in a position to make a decent profit, and of course their better equipped and stronger rivals were able to add vastly to their own gains. But these profits, it is argued, made it possible for the manufacturers to pay higher wages and to supply the workmen with food they would otherwise have been unable to buy, apart from which a good deal of the excess profits has been invested in war loans.

The American Sintering Co., Youngstown, Ohio, has about 200,000 tons of ore dust in its stock piles, and has decided to double its capacity, so that it will be able to reduce about 800 tons of ore dust per day. This will involve an expenditure of about \$100,000. The company also has a sintering plant at Hubbard, Ohio, where it is reducing about 600 tons of ore dust per day.

Mill and Hoist Motor Magnetic Brake

A new design of magnetic brake for use with mill, crane and hoist motors has been developed by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. The brakes, which are made in two styles for alternating and direct current motors, are characterized by quick operation and the simplicity and accessibility of the various parts.

Both types of brake are similar in operation and the construction is the same throughout, except for the armature lever and the magnet, which is of the clapper type. This arrangement eliminates all moving parts within the coil and enables the brake to release when the power is applied and become operative when the current is cut off. It is pointed out that this feature



A Clapper Type Magnet in a New Brake for Mill, Crane and Hoist Motors Eliminates Moving Parts within the Coil and Is Relied upon to Insure Positive Application and Release

is due to the design of the operating magnet, which has a high initial pull and a short traveling distance, from $\frac{1}{4}$ to 1 in.

In operation when the current is turned on the magnet is energized and the magnet armature lever overcomes the pressure of the compression springs through a toggle and releases the brakeshoe grip upon the wheel.

Steel Co. of Canada Operations

Operations at the plant of the Steel Co. of Canada, Hamilton, Ont., are being affected by the shortage of coke. One blast furnace has been banked, but the other is still producing basic pig iron for making steel. The furnace which has been banked was producing foundry pig iron, so that the supply of this material on hand is limited, stock on hand being utilized to meet contracts. The embargo which has been placed by the Canadian Government on export to foreign countries of iron and steel products has affected the company's export business by cutting off certain of its markets. This, however, will relieve the domestic situation to some extent by diverting supplies of these materials for consumption in Canada, so that the company will not suffer to any great extent in regard to its earnings on this account. The acute coke situation further justifies the company's policy in building its own coke ovens and by this means insuring sufficient supplies. The construction of these ovens, which is under way, however, will not be finished in time to relieve the present pressing situation, but will be ready for operation probably early in the summer.

At the stockholders' meeting of the Bridge & Beach Mfg. Co., Jan. 15, the following directors were re-elected: Hudson E. Bridge, Leo H. Booch, Henry C. Hoener, John F. Shepley, Louis H. Riecke, Laurence D. Bridge and George Leighton Bridge. The board elected the following officers: Hudson E. Bridge, president and treasurer; Leo H. Booch, vice-president and manager; Henry C. Hoener, vice-president; Louis H. Riecke, secretary; A. F. Gammeter, assistant treasurer; George Leighton Bridge, assistant secretary.

EXTRAORDINARY ACTION

Congress Provides for Investigating Claims of an Inventor as to "Free Energy"

WASHINGTON, Jan. 22.—One of the most extraordinary war measures thus far considered by Congress was passed by the Senate on Jan. 16 and, having already passed the House, will be sent to a conference committee to harmonize slight differences between the House and Senate drafts. It is in the form of a joint resolution "for the purpose of promoting efficiency, for the utilization of the resources and industries of the United States, for lessening the expenses of the war, and restoring the loss caused by the war," and, stripped of unnecessary verbiage, authorizes a series of experiments to be conducted under high scientific auspices to determine the practicability of the invention of one Garabed T. K. Giragossian, for the utilization of so-called "free energy." If the claims made on behalf of this invention are substantiated, all the power needed to heat and light the entire world and provide for the operation of all its industries will be obtained from the latent energy of the earth without the consumption of a pound of any kind of fuel.

The claims of Giragossian to an epoch-making invention, which he calls "Garabed," after his own name, have been urged upon Congress for several years, and two years ago the House Committee on Patents made a favorable report upon a measure authorizing a test of the device under official auspices. There was much opposition to the project, however, as there were many members of both houses to whom the invention appeared to be highly reminiscent of the once famous Keely motor, and the resolution providing for the official test failed of final passage. The inventor, however, was not discouraged and has since succeeded in securing the influence of leading members of both houses to assist in the passage of a carefully guarded measure under which the Government assumes no financial risk in testing the invention, but in the event of a successful demonstration of his device, promises the inventor a patent and an unusual degree of protection in consideration of the right to acquire exclusive control of the invention for public purposes.

The resolution as passed by the Senate provides that the Secretary of the Interior shall prescribe the rules governing the test, which is to be carried out under the supervision of five eminent scientists appointed by the inventor, but approved by the Secretary. If the demonstration proves the practicability of the "Garabed" discovery or invention, and it appears further that he is the first and original discoverer, and if the Secretary of the Interior decides to accept the assignment of the use of the invention for Government purposes the inventor "shall be recognized by the United States Government as the original discoverer, inventor, and legal owner of the invention or discovery and of any improvements pertaining thereto that may be made by the said Garabed T. K. Giragossian." The certificate of the commission of scientists as to the value of the discovery and that Giragossian is the original discoverer or inventor thereof is made to supersede the usual examination conducted by Patent Office experts and will entitle the inventor "to all the rights and benefits of said discovery or invention for a period of 17 years."

The inventor claims to be prepared to demonstrate the value of his invention immediately after the approval of the joint resolution.

Repairs to No. 2 Hubbard blast furnace of the Youngstown Sheet & Tube Co. at Hubbard, Ohio, have been completed, and the stack will blow in just as soon as a full supply of coke is assured. The stack has been relined, other repairs made, and the capacity has been slightly increased. It is now expected to turn out about 400 tons per day. The company is operating all of its four furnaces at East Youngstown, having a combined daily capacity of about 2000 tons.

FREE EMPLOYMENT BUREAU

Shipping Board Plans to Obtain Employees on the Pacific Coast

SEATTLE, Jan. 15.—The United States Shipping Board has established a free employment bureau in Seattle, where applicants for work in the shipyards are urged to file their names. The bureau is officially recognized by the shipyards and by the unions, and in future the shipyards will obtain all their employees from the Government offices. It is stated that approximately 5000 workers are now registered for employment, and that no difficulty will be experienced in obtaining all the workers necessary to keep the plants operating to capacity. The main difficulty is in securing the necessary tools and equipment for the shipyard workers. Lumber production has fallen short of the requirements recently, due to the close-down of a large number of logging camps and lumber mills as a result of the inclement weather and the excessive rains and floods during December. Most of these plants are again in operation, although the scarcity of railroad cars and congestion of freight has slowed up production.

Shipbuilders of the Northwest have been advised by Washington that they will be given all the contracts the plants can handle, and the yards are making every effort to secure all the contracts that are available. Boat builders in Seattle have received an invitation to bid on 4000 metallic life boats to cost more than \$1,000,000.

The lumbermen of the Northwest have definitely refused to put the eight-hour day into effect in the mills and camps, asserting that the shorter day would mean a tremendous disadvantage for Northwest mills in competition with other manufacturers throughout the country.

Board of Public Works, Seattle, will receive bids until March 1 for construction of the proposed \$5,000,000 hydroelectric power plant to be built by the city of Seattle on the Skagit River. Separate bids will be taken on the power plant and the transmission line.

Effect of Striking Arc on Welded Steel

To study the effect of striking an electric welding arc on the physical properties of steel being welded, the Westinghouse Electric & Mfg. Co. made tests at its works in East Pittsburgh, Pa. An arc was struck on four of five standard test pieces of hot rolled steel, carbon content ranging from 0.1 to 0.2 per cent. The voltage of the arc-welding circuit was approximately 60 volts and the current approximately 150 amp. Tensile strength tests of all five pieces showed little difference in ultimate strengths, which ranged from 48,400 to 49,350 lb. per sq. in., the latter result being obtained from the test piece which was not struck by the arc. The other ultimate strengths as determined were 49,200, 49,100 and 48,600 lb. per sq. in. Elongation on rupture ranged from 40 to 44 per cent the lower value applying to the test piece which was not struck by the arc.

To determine the effect of both heat of welding and of striking the arc, a solid plate was reinforced throughout its entire length on one side with a deposit of metal from the electric arc and the material deposited was subsequently removed restoring the original thickness of the plate. The tensile strength of the sheet of steel from which the plate was cut was approximately 56,000 lb. per sq. in., while tensile strength tests on the plate after the deposited material had been removed showed an ultimate strength of 59,800 lb. per sq. in. with 33 per cent reduction in area and 14 per cent elongation. The reduction in area on rupture of the original stock was 60 per cent and the elongation 28 per cent.

The Petroleum Iron Works Co., Sharon, Pa., has taken over the Pressed Steel Products Co. of that place, and will operate it as its steel barrel department. It is stated there will be no change in management or policy.

A Sectional Portable Belt Conveyor

For handling bulk or packaged material of all kinds, the Barber-Greene Co., Aurora, Ill., has developed a portable belt conveyor of the sectional type. It is designed for unloading cars and delivering the material to stock piles, bins or wagons, reloading cars from these



All Kinds of Material Either in Bulk or in Packages Can Be Handled to and from Cars by a Portable Belt Conveyor of the Sectional Type

piles and for handling material in warehouses where it is not possible to install a fixed conveyor system. The conveyor can be shifted as the conditions of the work may require, a number of different arrangements for handling and moving the conveyor being provided.

The essential feature of the conveyor is an ordinary belt type unit made up in a light steel frame as a self-contained unit. A standard driving end is combined with a standard discharge end to form a conveyor 15-ft. in length and the frame is manufactured in lengths which are multiples of 3 ft. Thus, by the use of standard intermediate sections, it is possible to form a conveyor having a length of 60 or 75 ft. The frame sections are interchangeable and they are punched to gage, thus permitting them to be combined easily. The belts are joined with a dovetail lacing which, it is pointed out, aids in the sectional feature. The same type of frame is used for the various forms of conveyors which include plain and belt-flight units and belt and bucket elevators. Pressed steel pulleys and cut gears are employed for the drive and the frame construction is designed to take a uniform load of 4000 lb., on a 50-ft. span with a unit stress of 16,000 lb., and at the same time provides a form of construction that is readily portable.

In operation the material is shoveled into the conveyor hopper and discharged over the end upon a stock pile or another conveyor where it is desired to get the material farther away from the car or other conveyance in which the material was brought to the plant. It is also possible as in the case illustrated to let the material flow from a hopper car or bin directly into the conveyor hopper and thus transfer the material without any manual labor. Different arrangements are provided for handling and moving the conveyor from time to time. These include chain hoists and trolleys to suit various type of overhead tracks and special trucks for moving the conveyor on the ground or the floor. The latter include plain trucks, adjustable ones, where it is desired to vary the height of the discharge, and trucks with casters for warehouse use in both the plain and adjustable types.

"Several great establishments in England and the United States have formed alliances with manufacturing plants in Japan," says the *Japanese East and West News*. "The Stanley Works, New Britain, Conn., has purchased 52 per cent of a large machinery plant near Kobe. The Kobe corporation will have the benefit of the best American experts and will be developed along the latest scientific lines."

The business of Charles E. Davis, Rutland, Vt., is now operated under the name of the Charles E. Davis Foundry Co., Inc.

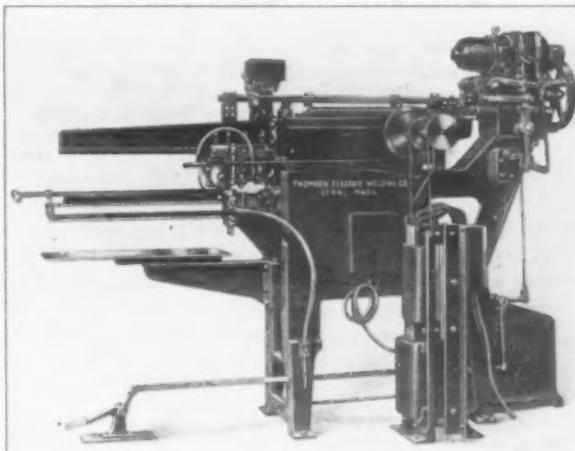
An Electric Seam Welding Machine

A line of machines for welding seams in sheet iron and steel by the electric resistance process has been developed by the Thomson Electric Welding Co., Lynn, Mass. It consists of two distinct types, the one that is illustrated being driven through a motor, toothed clutch and worm, while the other is supplied with a speed reducer and crank mechanism. Both machines are equipped with traveling upper dies, while practically any form of lower die and jig necessary for handling any variety of can, cylinder or cone can be supplied.

The machine illustrated is intended primarily for welding the longitudinal seams on pieces such as cans, stove parts, flat pieces, and rectangular shapes such as metal boxes where the material does not exceed No. 16 gage in thickness and the length of the seam is not more than 24 in. The limits between which work can be handled range from 3 1/2 to 20 in. in diameter and 8 to 24 in. in length. In operation the piece to be welded is secured in a specially designed jig on the lower horn or arbor and pressure applied to the treadle. This engages the clutch of the driving mechanism and causes the welding roller on the upper horn, which is actuated by the movement of a screw to come forward. The current is automatically turned on when the welding roller makes contact with the stock and passes through the material to be welded to the lower copper horn and thence to the transformer, thus completing the circuit. The resistance of the metal being welded is relied upon to generate a welding heat so that the pressure caused by the roller gives a continuous weld for the entire length of the seam. The current is automatically turned off when the roller reaches the end of the seam and the roller is returned to its original position, thus permitting the welded piece to be removed from the jig and replaced by another.

The machine is equipped with an adjustable-speed motor which provides a range equivalent to from 7 to 13 strokes every minute. An hourly output of as high as 200 24-in. welds has been obtained and where the seam is not so long this figure can be increased, depending upon the character, thickness and shape of the stock and the speed of the operator.

The other machine operates in exactly the same way and is designed for small sheet metal pieces such as cans, stove burners, flat pieces, match boxes and revolver magazines where the length of the seam does not



Sheet Iron and Steel Not Heavier than No. 16 Gage Can Be Welded in a Recently Developed Electric Resistance Machine where the Length of the Seam Does Not Exceed 24 In.

exceed 8 in. As high an hourly output as 700 welds has been secured from one of these machines, but this figure is governed by the character, thickness and shape of the stock, the speed of the operator and the number of jigs that can be loaded by the helper.

The New Standard Hardware Works, Mount Joy, Pa., has made an addition to its equipment for all kinds of hot tinning of grey iron, malleable iron, steel and brass stampings, etc.

Hardware Men Will Help Win the War

Manufacturers' Organization Formed—Vice-President Baackes, of American Steel & Wire Co., Makes Eloquent Address on Importance of United Action

HARDWARE manufacturers of the United States, numbering about 350, held a meeting at the Hotel Biltmore, New York, Thursday, Jan. 17, and formed the Hardware Manufacturers' Organization for War Service. Charles W. Asbury, Enterprise Mfg. Co., Philadelphia, president of the American Hardware Manufacturers' Association, presided. Addresses explaining the purposes of the war organization were made by the members of the War Service Committee: Fayette R. Plumb, of Fayette R. Plumb & Co., Philadelphia; Frank Baackes, vice-president and general sales manager of the American Steel & Wire Co., Chicago, and A. W. Stanley, of the Stanley Rule & Level Co., New Britain, Conn.

Charles W. Asbury was elected president of the new organization, and the three members of the War Service Committee are to constitute its executive committee. F. D. Mitchell, the secretary-treasurer of the American Hardware Manufacturers' Association, was elected to the same office in the new body. The offices and facilities of the manufacturers' association became immediately available in carrying out the purposes of the war organization.

Through the Hardware Manufacturers' Organization for War Service the following questions will be taken up:

Various Kinds of Service

1. The distribution at reasonable prices of orders from the Government which the Government is not able to place satisfactorily with individuals.
2. The providing of additional sources of supply when the demand is beyond the power of the whole industry to care for, through
 - (a) The speeding up of present facilities.
 - (b) The co-operation of related productive capacity.
 - (c) The shifting of production to industries not otherwise essential to winning the war.
 - (d) The providing of additional facilities.
3. Securing proper priority for the shipment of supplies to or finished products from various industries represented.
4. Questions affecting the supply or productivity of labor.
5. General questions affecting the policy of taxation.

Several sections have been created covering different classifications of goods, and each section will have an advisory price board, whose function it will be to keep prices on a reasonable basis. Price-fixing of hardware products, if such should at any time become necessary, will be more or less in the hands of the manufacturers. If the Government should at any time want an investigation of the prices it is paying for hardware the new organization will be in a position to supply such information almost instantly.

One of the interesting features of the meeting at the Hotel Biltmore was the stirring address made by Frank Baackes, vice-president and general sales manager of the American Steel & Wire Co., who said in part:

Mr. Baackes' Address

"There is one fact that every thinking man in this country is sure of to-day, and that is that we are at war and that we must either win or lose this war. It is of course unthinkable that we will lose this war. Nor is it possible to the extent that that would mean that we ever would be subject to the dictation of Germany.

"Before that will ever take place this war will continue forever, if it takes the last man and the last dollar and the last drop of blood, they will be expended before we ever submit to anything of that kind. To

say simply 'We will win this war' is not doing it. We wish this war won in this country. In other words, we do not appreciate the task that is before us. We are tackling something that has never been done in the history of nations—conducting a war of this magnitude three thousand miles away from the base, against what is acknowledged to be one of the greatest military and commercial powers of the twentieth century.

"We can only say: 'We must win this war.' And after that, perhaps, gentlemen, we must consider what we are here for to-day. Washington alone cannot win this war; nor is it a war of Washington alone. This is our war, in which every man in this country is concerned. Our future and our welfare are at stake. In order to win this war, we must have co-operation, co-ordination and systematization of the fullest extent, as Germany now has. Otherwise, gentlemen, you cannot beat them.

"If Germany's co-ordination and co-operation and systematization and aggressiveness in doing things has been the cause of this war, the only way we can beat them is to be more aggressive, better co-ordinated, better organized and more efficient than they are to-day. And after we have accomplished their subjugation by these superior methods, if then we find that that is the curse of mankind, and that people are not happy under that condition of organization, then after we have done our task, we can go back to the slipshod way which we have had. We could go back to it if that means the happiness of mankind. But until we have accomplished our task we have got to do things; and we must not wait for Washington to ask us what to do, because Washington in a sense is not quite as efficient as it might be; we know that.

Do Own Organizing

"Being part of this great national undertaking, why should not the people who know what is what, especially in their respective lines, do their own organizing and mobilize the facilities of each particular industry?

"We are not only waging war for to-day, but we must look to the future. We have not done that in this country. We have not been allowed to. We have had the Sherman anti-trust law teaching us to pull apart, and not to work together; and to-day in this crisis we are confronted here and there with 'We cannot do this,' and 'You must not do that,' because it is contrary to the Sherman anti-trust law.

"Gentlemen, the time is here for us, who are really the Government of the United States, to suspend that Sherman anti-trust law, as a war measure. And unless we do, gentlemen, we cannot win this war, nor can we ever co-operate in the way we have got to.

"Now, what is the consequence to-day? Washington is absolutely overrun by all kinds of people wanting to do business. We do not get anywhere. If we had a condition where every industry was organized, I do not care how small, if this war continues, I am quite sure its organized help would be needed. Then we would have a book that would tabulate every industry, and who represented it. That book would be given to each of the purchasing departments of the United States Government, and everybody would stay away from the purchasing departments, so that they could do their work. Then if we got a specification or requisition calling for certain materials, they should be told to call upon the men who represent the industry, and those

men could then speak for the industry. We should be in position to take the business and distribute the business pro rata among the members of that section or division. It seems to me to be as easy as a, b, c. We do not plan anything to interfere with the Government. All that I am asking is that we will create a condition which will help the Government, help the war, and help ourselves.

"I am in favor of each organization taking everything into consideration. During this world crisis I am an absolute believer in price limitation on every commodity and every necessity required in the conduct of this war by the Government and by the people. The situation will at times be so tense that material will be scarce, and therefore it is absolutely necessary that the cost of living in this country be lowered. It is high enough now and cannot go any higher; and unless you arrest it by fixing prices you will have a serious condition in this country. Men must live, and men must have sufficient wages to meet the rising cost; and, therefore, the only way you can prevent this undue demand of labor for higher wages is to find the necessary means to see that the cost of living is kept stationary.

"We all want to make money during this war, for two reasons: (1) So we can pay good wages; and (2) So we can furnish the money to the Government to conduct this war. Those are the only two reasons why I want it. I do not want it for the purpose of making money for myself. That purpose during this war must be laid aside. Every manufacturer should be permitted to make all the money that is fair, and if necessary he should say, cheerfully, to the Government, 'It is yours to the last dollar if you need it.'

"There is not much more we can say, except that we have got to win this war, gentlemen, and we have got to win it for the benefit of ourselves, and for the benefit of the world. I admire the Germans; I am one of them; but, so help me God, I do not want to live under their conditions. Nor do I want this freedom-loving country to ever have to face those conditions."

Workmen's Compensation Insurance for Munitions Plants

Two years ago ten companies decided to shoulder the compensation insurance risk in common for the coal mines. This proved so successful that the idea has been extended to munition plants and other prohibited risks. W. G. Cowles, vice-president Travelers Insurance Co., and chairman of the Associated Companies (the operating name of the union of the ten companies) has authorized the following statement concerning the movement:

The companies under the same operating name have now entered into a supplemental agreement to provide a co-insurance and re-insurance method for handling not only risks possessing an obvious element of collective hazard but risks which for other reasons are difficult subjects of insurance for a single company. The prohibited list of the future, therefore, will include only those employers who, because of indifference, unwillingness or deliberate design, refuse to improve and maintain the moral and such of the physical conditions of their risks as are capable of improvement and which, if unimproved, constitute a hazard against which no insurance should under any circumstances be provided.

The Lavigne Mfg. Co., Detroit, has changed its name to the Commonwealth Brass Corporation. There will be no changes in the products. P. D. Dwight is president of the corporation; N. A. Henwood is vice-president and general manager; Carl L. Brumme is secretary and treasurer, and C. S. Kellum is superintendent of plant. The factory is located at 625 to 651 Commonwealth Avenue, Detroit.

EXPORT BILL DELAYED

Business Men Urged to Prod Representatives to Take Action

WASHINGTON, Jan. 22.—Advocates of the Webb-Pomerene export combination bill feel considerable anxiety concerning its fate notwithstanding the fact that it has passed both houses, and are suggesting to business men the desirability of rousing their senators and representatives to the necessity of prodding up the committee leaders who have the measure in charge. So far as can be ascertained, there is absolutely no excuse for the delay in the final passage of this bill, which has been approved by both houses.

The House passed the export combination bill on June 13, 1917. The Senate took no action, but when Congress reconvened the export bill occupied a very advantageous position on the calendar and, thanks to the energetic work of its friends in the Senate, it was kept before that body until, on Dec. 13, it was passed by an overwhelming vote, although the opposition of several senators under the leadership of Cummins of Iowa, was maintained up to the moment of the roll call. Unfortunately, however, the enemies of the bill had succeeded in forcing into it in committee and on the floor a series of amendments which, while not vital, made it necessary to return it to the House for concurrence. To save time, however, it was arranged that the Senate should assume that the House would refuse to concur in the amendments, and the bill was therefore returned with a request that it be immediately referred to a conference committee to harmonize the diverse provisions of the House and Senate drafts. Conferees on the part of the Senate, Messrs. Pomerene, Robinson and Cummins, were immediately appointed to take the measure up with the representatives of the House.

The House received the bill on Dec. 14 and laid it on the Speaker's table to enable the Judiciary Committee to examine it. Four days later, both houses took a holiday recess until Jan. 3 without action on the Senate's request for the appointment of a conference committee. Upon reconvening the House leaders appeared to have lost interest in the bill. For more than a fortnight the bill lay on the Speaker's table without any attention whatever, but a few days ago, after numerous inquiries had been made of the House leaders, the chairman of the Judiciary Committee moved the appointment of the House conferees, whereupon Speaker Clark designated Representatives Webb, Carlin and Volstead. Another week has passed, however, without so much as a meeting of the conference committee. Chairman Webb is out of the city, and no date for the convening of the conference has been fixed.

It will be seen that nearly six weeks have elapsed since the Senate passed this important measure and as yet no steps have been taken to perfect it in conference. The delay is certainly extraordinary and is so significant that explanations from the House leaders are in order. They will probably be promptly forthcoming if the business men of the country who are vitally interested in this legislation will take it up vigorously with their representatives.

W. L. C.

On account of the congestion of the railway service and the expressed wish of the Government to restrict passenger traffic to the minimum of necessity at this time, the board of direction of the American Concrete Institute on Jan. 16 decided to postpone the annual meeting of the institute until June 24-26 at Atlantic City, N. J. The regular meeting had been scheduled for Chicago on Feb. 7, 8 and 9.

The Driver-Harris Co., Harrison, N. J., announces that it is now able to make prompt deliveries of cold rolled 99 per cent pure nickel sheets. On account of difficulty in obtaining raw materials the supply of this commodity has been limited since the war.

ESTABLISHED 1855

THE IRON AGE

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Workless and Fuelless Days

There was a day of excited and in part justified denunciation of Fuel Administrator Garfield's order closing down industries and business. Then came from every quarter of the freight-congested States to which it applied assurances that in letter and in spirit it would be carried out; and now that the first five days of idleness are past there is the beginning of an appraisal of losses and benefit. We have been told that the people needed a bitter experience to begin really to appreciate that we are at war. To whatever degree that was part of the intention, success may be claimed already. For nearly a week there has been no semblance of "business as usual" east of the Mississippi River. Yet in the light of the recommendation of the Fuel Administrator that employees be paid regular wages for the 13 days of idleness it was apparently only employers who were to be taught that we are at war. Thirteen extra holidays with full pay would scarcely suggest war hardship to 95 per cent or more of the millions affected.

What else was to be expected than that the nation would be astounded by a proposal for wholesale stoppage of industry? We have been called on from Great Britain and France and Italy to speed up our war activities. From Washington the same word has gone out, first as an urgent imperative, and lately from the Shipping Board, the War Department and the Navy it has begun to be used to describe a pace already reached. The country has looked for a program of action even more intensified, and suddenly it got the command to cease from activity. That did not sound like the way to win the war.

To hear from the Washington defenders of the order that the situation was "serious beyond words" only reinforced the opinion widely held that the handling of the fuel situation had been bungled, and the shutting-down order was seen as the climax of the policy of putting inexperienced rather than experienced men in places of high responsibility in the conduct of the war.

Nobody doubts that the war and the country's failure to prepare for it until after entering it are responsible for much of the calamitous situation in transportation and fuel. Neither can it be denied, as is well brought out in the interview with a Pittsburgh iron and steel manufacturer, given else-

where, that railroad deficiencies, both as to equipment and labor, are largely of the country's own making. Nor should it be overlooked that the Fuel Administrator, in making such an order, has really taken the curse of the transportation collapse on his own head. Moreover, Dr. Garfield is right in saying that the most urgent thing to be done after weeks of vessel detention at Atlantic ports is to send to the American forces abroad and to the Allies the food and war supplies they vitally need; also to move for domestic use the fuel that has been held up by congestion of manufactured products and by the snow and intense cold of the worst winter in many years.

But granting all these things, it was highly reprehensible to decree idleness for millions of workers and not accompany the order with some constructive program for speeding up the railroad work which the stopping of industry was to make possible. Why did not the Director General of Railroads and the Fuel Administrator co-operate in giving to the country a plan by which some portion of the men thrown out of employment could be used in cleaning up the freight congestion? The emergency is one of the gravest the country has ever faced. Yet the cure offered is, on the one hand, the loss of half a month's production in many industries, and on the other hand the slow extrication of the railroads from their blockade by the use of their own seriously crippled forces. Industrial managers throughout the country would have been quick to respond to any leadership that sounded a clear call all along the line to attack the freight congestion and make way with it. But they were told to hold their hands and watch the situation right itself. Is it conceivable that an experienced industrial manager, charged with such a responsibility, would have handled the freight and fuel congestion as it has been handled thus far?

The American people are willing to make sacrifices for the winning of the war, but they want their sacrifices to apply directly to that object. They will want to see the largest possible good come out of the Garfield order, and are willing to believe it will teach them valuable lessons. Already it is seen as the beginning of a new alignment of essential and non-essential industries that may aid in cutting through the well nigh hopeless tangle of priorities. Having little to lose in respect to public esteem, the Fuel Administration may now be willing, in building

up its exemption list, to draw lines which there has not been the courage to draw before. And may we hope that further orders to industry will be calls to action and not to inaction.

The Steel Trade and the Closing Order

The Fuel Administration's plant-closing proclamation of last week is more a railroad order than a fuel order. As regards a very large part of the industrial operations affected, and particularly in iron and steel, there is a postponement of fuel consumption rather than a curtailment. If it is an advantage to give the railroads five days for cleaning up purposes, during which time industries do not call for the usual railroad service, then the plant-closing order should produce some favorable results. If a net reduction in the total quantity of coal consumed is expected, then the result will not measure up to expectations based upon consideration of the quantity of coal normally consumed.

The steel industry is not a small consumer of coal by any means, but such analysis as can be given the matter at this time indicates that there is little or no net reduction in the amount of coal consumed, and perhaps rather the reverse. As has been painfully evident for months past, the production of steel is regulated by the production of pig iron. Steel ingot production in December was at the rate of about 37,000,000 tons a year, when the productive capacity was fully 10,000,000 tons greater. The steel works ran to the extent that they had pig iron. The plant-closing order, both as to the five days ended on Tuesday and the contemplated nine Mondays following, was not intended to interrupt the movement of beehive coke from ovens to blast furnaces, or the movement of coal to by-product ovens. The blast furnaces continued in operation, producing the same amount of pig iron as if the Fuel Administration's order had not been issued.

On account of exemptions and the production of open-hearth stock ingots, a portion of the pig iron made during the five days has been converted into steel. Some iron also has accumulated, but will be converted into steel in a short time because there is such an excess of steel-making capacity as compared with the current rate of pig-iron production. A certain portion of this accumulated pig iron is "Sunday metal," i.e., metal which through the idleness of a steel department has been cast when otherwise it would have gone molten into the open-hearth furnace or Bessemer converter. The conversion of that iron into steel will involve the consumption of a certain amount of fuel that otherwise would not have been required—coke in the case of Bessemer converters employing cupolas and coal in the case of most of the open-hearth operations. During the period in which open-hearth furnaces were kept idle they consumed some coal, perhaps 15 per cent of their normal consumption, for keeping the furnaces hot and avoiding damage. Various heating furnaces have had to be kept warm, involving a consumption of fuel without any attendant production of useful material. In the case of exempted finishing departments it has been necessary to keep open-hearth departments in operation. At other open-hearth furnaces the steel has been

poured into ingots, which under the order could not be rolled during the period of restriction, but had to be allowed to cool, to be reheated later when it is permissible to roll ordinary steel.

It is obvious, therefore, that since the restrictive order does not result in any eventual decrease in the production of finished rolled steel, it does not in any respect decrease the steel industry's consumption of coal in the long run, but it does involve the practice of some wasteful methods, including the consumption of both coal and coke that otherwise would not have been required. To this extent the order is inefficient as applied to the steel industry, though it may have the advantage of postponing activity and thus giving the railroads a partial respite from the pressure they have been under.

While the mental effect of the order, the psychological influence upon the people, has been unfavorable, it has had one advantage. The iron and steel industry cheerfully and energetically undertook to carry the order out as soon as it heard of it, without protest or complaint. It remained for the on-looker to reflect that an ultimate increase in the consumption of coal would result from the order and that that increase would involve an increase in the cost of producing and rolling steel. The order closes various plants consuming steel, and thus from the business viewpoint it results in an increase in the cost of producing steel and a tendency to decrease the consumption of steel. Steel manufacturers have shown no disposition to parade these facts or to make any argument from them, but have simply obeyed orders.

Plate Supply in 1918

Capacity for the rolling of sheared plates was increased by approximately 100,000 tons a month during 1917, while during 1916 there was scarcely any increase. No new mills were built in the latter years, but some minor improvements were made to existing mills, whereby the capacity was somewhat increased.

Plates for shipbuilding having become such an important commodity, a recasting of the conception of plate-mill capacity has become necessary. In the past, capacity has been distributed quite well according to the industrial demand, between universal mill plates and sheared plates, light and heavy, and it was common to speak of plate production as a lump amount. Universal mill plates, however, are too narrow to be of much use in shipbuilding, while the product of the light plate mills is likewise unsuitable. Interest, therefore, centers upon production of sheared plates, $\frac{1}{4}$ inch and heavier. The production of this description of steel plates has been as follows:

	Gross tons
1913	1,108,509
1914	711,419
1915	903,501
1916	1,864,500

As there was a heavy demand for plates for shipbuilding even in the latter part of 1915, and as capacity was but slightly increased during 1916, it may be assumed that the capacity in existence at the beginning of 1917 was but slightly in excess of the actual production shown for 1916.

The capacity actually completed in 1917 may be rated, as indicated above, at about 100,000 tons a month, but to accomplish the production of this full amount better supplies of steel, and particularly of steel in the form of slabs, must be forthcoming than have lately been available. As the new mills of 1917 were completed chiefly toward the close of the year their contribution to the calendar year's output can hardly have been very great. If the year's output when reported proves to have been much in excess of 2,500,000 tons it will indicate that the older mills did better than in 1916.

There is little plate-mill construction now in progress likely to contribute tonnage in the near future, hence the matter of heavy sheared plate supply seems to rest chiefly upon the old mills and those that were completed in 1917. Through a full rounding out of existing facilities, a production somewhat in excess of 250,000 tons a month, or 3,000,000 tons a year, seems to be in prospect. In past years when there has been heavy industrial demand for plates, including plates for steel-car construction, the output has run below 100,000 tons a month. Prospects are that steel-car building operations will be relatively light in 1918, and it would appear, therefore, that there will easily be at the command of the shipbuilding trade from 150,000 to 200,000 tons of plates a month, if production at the capacity of the plate rolls themselves can be attained. This should prove amply sufficient for the entire shipbuilding program of the United States together with such requirements of our Allies as we may be called upon to meet.

Railroad Repair Shop Emergency

A great problem that confronts the Federal Government in dealing with the railroad situation is the matter of repairs to rolling stock. The condition of locomotives and cars, taking the country by and large, is deplorable. Repair shop facilities are wholly inadequate and have been inadequate for a long time. The railroads, having lacked sufficient money for both upkeep and extensions, have chosen to purchase new rolling stock rather than to provide ampler means for the maintenance of equipment already in use. Old repair shops have not been modernized as they should have been in their machine tools and in facilities for handling work, and new shops have come into existence but rarely. Consequently shop capacities which were insufficient a decade ago have now been far outdistanced by the needs of locomotives and cars. Thus deterioration has been more rapid with each succeeding year. An imperative need is that the balance between rolling stock and repair capacity be restored at the earliest moment.

Undoubtedly the practical railroad men who are acting with the Government will lay great stress on this phase of the situation. They will urge that large sums be spent for the purchase of the tools that are required for the efficient and quick handling of repair work. If their advice is to be followed, work should begin without delay. The present condition of the machinery market for heavy tools was made very clear by the results of the inquiry just sent out from Washington for 500 and more planers. The builders of this type of ma-

chine received the list with mingled chagrin and pleasantry, because it specified deliveries by April 1. A certain number of planers are available for such delivery, especially in the large sizes, but not nearly the desired 500. These machines, according to the understanding of the trade, are not for railroad work, but for imperative ordnance work for the Army. It is believed that the same general condition exists in various other lines of machinery which are included in the requirements of the railroads.

It is evident, therefore, that if new machinery is to be made available so that it may do its part in solving the transportation problem, orders should go in at once. Every machine tool builder in the country who can help in the effort to put the railroads on a sound basis of equipment will do his utmost. But first he must know what will be required of him. The authorities at Washington should realize that at this time of urgent need existing rolling stock is idle an abnormally large percentage of the time, because repairs have been of the patchwork variety, rather than of the thorough sort which means rejuvenation and efficient service.

It was brought out at the recent convention of the National Credit Men's Association that the United States Government is a poor-paying customer. Many companies are facing financial embarrassment, according to the officials of this organization, because of inability to obtain payments promptly from the authorities at Washington. This is the experience of many companies in the steel and machinery trades. In ordinary times, when the Government requirements represent a very small part of the total sales, no particular complaint has been made of official red tape in paying bills; but under present circumstances, when Government purchases frequently comprise the bulk of a company's business, the delays in getting money from Washington are a source of considerable worry. With war taxes to pay and bonds to be subscribed for, it is important for all manufacturers to keep their finances in a liquid state; but in many cases this cannot be done if there is not some reform in the methods of the Treasury Department in meeting the Government obligations.

National Reservoir of Railroad Cars

A suggestion that under Governmental auspices the railroads of the country should have the opportunity to secure a large number of cars for emergency conditions was made a year ago by F. N. Hoffstot, president Pressed Steel Car Co., in the annual financial review section of a New York newspaper. It is interesting to recall this in the light of recent Government control of the railroads and of the fact that freight congestion was such a large topic a year ago that it became the argument for the surplus equipment. Mr. Hoffstot thought it unfortunate that there was not some way whereby the railroads could secure each year the proper number of cars to replace those outworn. He emphasized the fact that in ten years they had purchased less than one-half their estimated annual requirements. Interest and depreciation charges for such surplus equipment over idle periods, he urged, would be more than offset by the saving to carriers and shippers in the times of congestion. With the Federal Reserve

Act framed to prevent the fluctuation of rates of money and the shipping bill designed to further shipbuilding, he considered it an altogether reasonable suggestion that provision be made for the regular annual purchase of equipment for transportation systems.

Official Price Pamphlet

Owing to the order of Fuel Administrator Garfield, which made it impossible to do any job work at printing offices from last Friday until Wednesday of this week, the final work on the pamphlet of the American Iron & Steel Institute showing prices of iron and steel products as agreed upon by manufacturers and the Government was delayed, but was resumed Wednesday and the pamphlets will be ready for mailing the last of this week by THE IRON AGE to any subscribers who so request.

Convention Postponed

The meeting of the Railway Business Association which was to have been held at the Waldorf-Astoria Hotel, New York, Jan. 25 and 26, has been indefinitely postponed on account of present business and railroad conditions.

OBITUARY

E. M. Hagar

Edward McKim Hagar, president of the American International Steel Corporation, died suddenly from pneumonia, Jan. 19, at his home in New York. He was born at Salem, Mass., and was 44 years of age. Mr. Hagar became president of the American International Steel Corporation last June. Previous to that time he had been president of the Universal Portland Cement Co., from 1906 to 1915, and later of the Wright-Martin Aeroplane Co. with headquarters in



E. M. HAGAR

Chicago. For two years he was president of the Association of American Portland Cement Manufacturers and he was the organizer and a past president of the Cement Products Exhibition Co. He graduated from the Massachusetts Institute of Technology in 1893 and from Cornell University in 1894. He organized and conducted the business of Edward M. Hagar & Co., manufacturers' representatives in machinery lines in

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Chicago, prior to his connection with the cement industry.

Mr. Hagar was a member of the American Society of Mechanical Engineers, the American Society of Testing Materials, the American Society of Civil Engineers, the Western Society of Engineers, the American Institute of Mining Engineers, the Illinois Society of Engineers and Surveyors, the Engineers' Club, New York, other clubs in Chicago and Pittsburgh, and of the Phi Kappa Psi fraternity.

February Meeting of Mining Engineers

The 116th meeting of the American Institute of Mining Engineers will be held in New York from Monday, Feb. 18 to Thursday, Feb. 21, inclusive. Technical sessions will occupy the morning and afternoon of Feb. 18, 19 and 20. On Monday evening, Feb. 18, there will be a "war smoker," and on Wednesday evening a "Hoover" dinner at Hotel Biltmore. For Thursday, Feb. 21, is scheduled an all-day excursion to the Princeton Aviation field. An attractive program has been prepared for the ladies. The committee on arrangements consists of J. E. Johnson, Jr., Chairman; Bradley Stoughton, vice-chairman, Ralph W. Deacon, J. V. N. Dorr, L. W. Francis, Mrs. S. J. Jennings, A. R. Ledoux, F. T. Rubidge, E. M. Shipp, G. D. Van Arsdale and A. L. Walker.

War Cabinet and Director of Munitions

Two Important Measures Reported by Senate Committee—President Wilson's Vigorous Opposition Indicated by Denunciation of Senator Chamberlain

WASHINGTON, Jan. 22.—To bring about the much needed centralization of authority and co-ordination of functions in the Government's war-making machine the Senate Committee on Military Affairs has formulated, and reported with a recommendation for speedy action, two measures of far-reaching importance. These bills will be urged for early consideration, and passed by both houses, unless the President's opposition, so bitterly expressed in his denunciation of Senator Chamberlain, is strong enough to prevent such action. The statement given out by the President last night, in which he goes to the extreme point of charging that the Senator's speech made in New York last Saturday "sprang out of opposition to the Administration's whole policy rather than out of any serious intention to reform its practice," has caused a tremendous sensation. The President will lock horns with the Senate, and will have as his chief defenders Senator Stone and a few other senators who were strongly arrayed against him at the time of the declaration of a state of war, and later.

Provisions for War Cabinet

The War Cabinet is to be composed of three "distinguished citizens of demonstrated executive ability," to be appointed by the President and confirmed by the Senate, through whom the war powers of the President are to be exercised. Under the terms of the bill the War Cabinet will have jurisdiction and authority "(a) to consider, devise and formulate plans and policies, general and special, for the effectual conduct and vigorous prosecution of the existing war, and, in the manner hereinafter prescribed, to direct and procure the execution of the same; (b) to supervise, co-ordinate, direct and control the functions and activities of all executive departments, officials and agencies of the Government in so far as in the judgment of the War Cabinet it may be necessary or advisable so to do for the effectual conduct and vigorous prosecution of the existing war; (c) to consider and determine, upon its own motion, or upon submission to it, subject to review by the President, all differences and questions relating to the conduct and prosecution of the war that may arise between any such departments, officials and agencies of the Government; (d) to require information from and utilize the services of any or all executive departments and executive officers or agents of the United States and of the several States and Territories and the District of Columbia necessary or helpful in the proper performance of the duties of said War Cabinet; (e) in the exercise of the jurisdiction and authority hereby conferred to make, subject to review by the President, the necessary orders to any such department, bureau, official, or agency of the Government, and such decisions as the matters under consideration may require or warrant; and (f) to make rules and regulations governing its own procedure; and said War Cabinet shall, upon completion of its membership, immediately organize, and thereupon and thereafter proceed to an expeditious disposition of all matters coming before it."

It is further provided that the Secretaries of War and the Navy shall assign to the War Cabinet such commissioned officers as the cabinet may request, and the cabinet is further authorized to employ all clerical and other employees required for its service. The salary of each member of the cabinet is fixed at \$12,000

per annum, and the bill provides that at the end of six months after the termination of the present war, or at such earlier date after the termination of the war as the President may designate, the cabinet shall cease to exist.

Proposed Director of Munitions

While in deference to President Wilson's expressed wish the Senate Committee on Military Affairs has abandoned its original plan to create a new executive department for the procurement and distribution of war material, it is determined that the grave responsibilities incident to this important work shall no longer be divided among several departments and independent boards, commissions and councils but shall be carefully co-ordinated and placed upon the shoulders of a single high official to be known as the Director of Munitions. To this end the Senate committee has reported a bill intended as a substitute for that creating a department of munitions and dealing with the subject in greater detail. This measure proposes that during the continuance of the war and for not more than one year thereafter there shall be an agency to be known as the Director of Munitions appointed by the President with the advice and consent of the Senate who, under the President, "shall have and shall exercise either directly or through any other agents or agencies of the Government that the President may designate for the purpose full power to purchase and to provide for, supervise, and control the procurement, manufacture, transportation and distribution of such munitions of war as the President in pursuance of the purposes of this act shall designate from time to time." The Director of Munitions is authorized to exercise "such of the powers and authority now or hereafter vested in the President or heads of executive departments as the President may deem necessary or appropriate." It is further provided that the term "munitions" shall be held to include "anything required to be provided for war purposes including arms, ammunition, warlike stores or material and anything required for the equipment or transport purposes or for, or in connection with, the production of munitions."

Funds now to the credit of any of the executive departments intended for the purchase or manufacture of munitions of war are authorized to be transferred to the Director of Munitions in whole or in part in the discretion of the President, who may assign persons in the civil, military, or naval service to temporary duty under the new director, who is also authorized to select and appoint all clerical assistants and other employees that may be required in his department in addition to those transferred from other departments. At the end of one year after the termination of the war, or at any earlier date after the close of the war as the President may designate, the office of Director of Munitions shall cease to exist and the functions, funds, records and other public property pertaining thereto shall be transferred to those executive departments to which, respectively, they most nearly pertain.

Would Work Revolution

Should the Chamberlain measures be enacted into law, as is confidently expected by the Senate leaders, they will work the greatest revolution in the organization of the executive departments and the collateral boards and commissions now in existence that has been contemplated at any time since the United States became involved in the war. At one stroke, the present cabinet is reduced to the status of a subordinate executive body and the supreme direction of all military

and naval movements is placed in the hands of a superior war council wielding limitless authority and subject only to the control of the President. The Director of Munitions may immediately supersede the purchasing and manufacturing bureaus of the War and Navy Departments and may possibly take over some of the most important functions of the United States Shipping Board and the Emergency Fleet Corporation. In short, all the war-making functions of the Government will be centered in the new war council and the Director of Munitions, and all officials who heretofore have planned and prosecuted the war operations will be reduced to subordinate positions and required to execute the orders of their superiors.

It is not yet altogether clear as to the fate of the Council of National Defense, should the Chamberlain bills be enacted. Obviously the War Industries Board will surrender its duties and responsibilities to the new Director of Munitions unless it should be continued in some reorganized form as a subordinate division of the office of the director. Clearly the supreme council will take over the work of the Council of National Defense, meaning by that the cabinet members composing it.

So far as concerns the Advisory Commission, which now takes its authority from the Council of National Defense, it is probable that discretion will rest with the President and the supreme war council to continue this organization in a more or less perfunctory form, but its direct relation to the conduct of the war will probably cease. The chief reason for maintaining the form of the Advisory Commission would probably be for the purpose of preventing the abandonment of certain collateral activities of sub-boards which promise some degree of usefulness.

Mr. Willard Explains

In this connection the resignation of Daniel Willard, as chairman of the War Industries Board and his testimony with regard to the efficiency of the Council of National Defense given before the Senate Committee on Military Affairs have served to increase the probability that the Council of National Defense will be dispensed with in whole or in part. The impression given by Mr. Willard's testimony was distinctly adverse to the commission and this has since become so apparent that Mr. Willard has felt it incumbent upon him to write a diplomatic disclaimer or qualification of his statements in order that what he has said should not appear to reflect too severely upon his former associates. In a letter to Senator Chamberlain, Mr. Willard says in part:

As I view the matter, while the Council of National Defense by force of circumstances has been obliged to deal with a great many matters pertaining to the war and has done much real and valuable work in that direction, its chief value will be developed in times of peace. I should dislike very much to think that anything I may have said this morning would leave the impression that the Council and Advisory Commission are not useful agencies of Government, because I believe they are, and while undoubtedly they were intended primarily as agencies of peace, they have none the less performed a very important service in time of war.

Giving the most liberal construction possible to Mr. Willard's letter, it is apparent that he regards the Council of National Defense and Advisory Commission "primarily as agencies of peace" which, to say the least, is an extraordinary view of a body created for the sole purpose of assisting in the conduct of the war. Coming from the man who for many months has served as chairman of the War Industries Board, and therefore is fully familiar with the activities of the council and the commission, there is little in Mr. Willard's statement that would seem to justify the continuance of either council or commission in the event that the Chamberlain war measures should be enacted.

Secretary Baker's Reorganization

It is highly significant that while it is stated by members of the Senate Military Committee that the President, although opposed to the creation of an executive department of munitions with a cabinet officer at its head, "does not object" to the authorization of a Director of Munitions, nevertheless the Secretary of War is not only continuing actively the work of re-

organizing his department but, through the Committee on Public Information, has promulgated an official statement to the effect that the work is practically completed.

Secretary Baker's determination to put his reorganization of the War Department immediately into effect notwithstanding the plans Congress is making to create a supreme war council and a Director of Munitions has already produced a very embarrassing situation. Pursuant to the plan outlined by Secretary Baker, well known business executives in all parts of the country are being brought to Washington to be placed in charge of various branches of the work, in many cases leaving executive positions of great importance to the industries with which they have been associated. It is a serious question whether it will be practicable to so co-ordinate Secretary Baker's plans with those made necessary by the passage of the Chamberlain measures as to provide responsible positions for these experienced executives, and it is feared that in some cases at least they will decide to retire from the service of the Government, possibly to resume their former posts.

Iron and Steel Prices

Already inquiries are reaching Washington as to the officials who, under the legislation proposed by the Senate Committee, will have charge of the work of revising the schedule of controlled iron and steel prices, which expires March 31, next. It is too early, of course, to attempt to answer this question positively, but it is the best opinion here that all the functions of the War Industries Board will be taken over by the Director of Munitions. If the board is continued, it will be in a subordinate capacity and all questions of policy will be ruled upon by the new director subject to the approval of the supreme war council.

Shipbuilding at Seattle

SEATTLE, Jan. 21.—Statistics recently compiled by the Seattle Chamber of Commerce show that shipbuilding plants at the end of 1917 have a monthly payroll of \$1,600,000, and that the value of ocean-going merchant ships now complete or contracted in Seattle are valued at \$121,000,000. The shipyards and allied industries now employ 22,000 men, as compared with a payroll of 3000 men two years ago. During the year past Seattle shipyards completed 29 ocean-going merchant ships, with a total dead weight cargo capacity of 184,800 tons. Throughout the state, during the year, there were 77 vessels launched.

Figures compiled by the Seattle Chamber of Commerce show that during the past year Seattle's industrial plants have been more than doubled in number and in value of product manufactured. There are now 1200 plants in the city, with an annual payroll of \$42,000,000, and the value of whose product is more than \$200,000,000. The tremendous activity of the shipyards immediately showed its effect in the demand for allied industries, such as boiler and engine plants, foundries, machine shops, and the metal-working plants. These plants have doubled and trebled during the past year, and practically every plant is working to capacity, with orders ahead that insure operation for a long period of time.

May Revise Shell Steel Specifications

PITTSBURGH, Jan. 23.—(By Wire).—Recently a meeting of representatives of the Government, the Allies and the various steel making concerns that are interested in Government contracts for shell steel, was held in Youngstown, Ohio, to discuss the possibility of securing modifications in the specifications for shell steel with the result that it seems likely these specifications will be revised in such a way as will improve the quality of the steel and at the same time make possible a larger output than is now being obtained.

The Osborn Mfg. Co., Cleveland, maker of foundry equipment and supplies, has changed its name to the Cleveland Osborn Mfg., Inc.

Iron and Steel Markets

SERIOUS FUEL SITUATION

Shut-Down Makes No Marked Change

More Commercial Steel Available—Pig-Iron Sales for Second Half

With so large a part of their product, particularly in heavy lines, going to the Government or its Allies, or to plants having Government contracts, the iron and steel industries felt less than others the closing-down order of the Fuel Administration. Fresh snows and intense cold combined to aggravate the freight blockades, as the order went into effect, and made more difficult any measure of its effects.

It is estimated that the five days ending Tuesday brought a curtailment of 10 to 15 per cent from the already restricted rate of recent weeks. Probably 70 per cent of the blast furnace, open-hearth steel and coke-oven capacity was kept in operation, but all Bessemer plants were down, the Government not buying converter product, and only such rolling mills were run as had been engaged in producing for ships and shells, including plate mills and some structural and boiler-tube mills.

Not only is there great perplexity owing to the new priorities in fuel, but some observers see the steel trade drifting into a state of helplessness that bodes no good even for some work considered important to the war. Exemptions from the closing order do not meet the case, if fuel needed to keep iron and steel works going has been diverted to uses higher up on the preferred list. Deliveries of steel, in many cases, are getting further behind.

There has been prompt and generally strict compliance with the Garfield order, not only by producers but manufacturing consumers of iron and steel. Blast furnaces were considered exempt, and open-hearth furnaces in many cases produced much more steel than would take care of exempted rolled product, the remainder going into stock ingots. Rolling-mill operation was much curtailed.

The steel trade sees the bearing of the week's events on the effort at Washington to have steel production and prices put under the same executive control that now exists in food and fuel, opinion being that the chances of the Pomerene bill have not been helped by the results of centralized power over fuel.

As a result of the country's engrossment with the throwing of millions of workers into idleness the steel market has had fewer transactions than in months.

A large amount of structural steel for Government work is under inquiry; Government needs in

France are still unsatisfied. Inquiries on behalf of the Signal Corps call for 500 buildings. December bookings of fabricating works were apparently more than in November, when the high record of the year, 77 per cent of capacity, was made.

Some agricultural implement manufacturers have come into the market for early requirements in both soft and hard steel bars, on a scale pointing to large production in the coming season. In the automobile trade a rather more hopeful view is taken, some makers looking for about 50 per cent of their normal output.

Government awards are being made on 4400 cars for use in France, 400 being of narrow gage.

Some buyers of finished steel for commercial uses have found it easier to place contracts for plates, shapes, sheets and bars, and mills have been rather more inclined to accept export business on which permits have been obtainable.

Comment has been passed on the action of the Navy Department in seeking bids on various products included in the official price schedule, but not among the few on which prices were specifically announced by the President. It does not appear, however, that bidders are actually naming competitive prices in such cases.

Selling of pig iron for second-half delivery is of larger proportions. One interest sold 10,000 tons in eastern Pennsylvania for such delivery, and other considerable sales have been made in New York. The average furnace, however, prefers to know more about the prices that will apply after April 1. At St. Louis a 10,000-ton sale of basic iron for the last half was made by a local furnace. In the Central West the pig-iron scarcity is more marked, and output in the Pittsburgh district has been scarcely more than 60 per cent.

Government continuance of the copper price of 23.5c. is announced at last, though for some time foreseen in the trade. The extension is to June 1.

Pittsburgh

PITTSBURGH, Jan. 22—(By Wire.)

The five day shutdown of the steel plants and all other manufacturing works from Thursday midnight last week until Tuesday midnight this week, except such plants as were exempted because they were making Government materials on direct orders, is now over, and the trade is anxiously waiting to know whether the shutdown accomplished, even in part, the object sought, which was to relieve the railroad congestion. At first, the criticism by manufacturers against the five day shutdown was very severe and caustic, but after sober reflection the opinion steadily gained ground that perhaps the shutdown was the only thing to be done that might relieve the railroad congestion, which was steadily getting worse. Hundreds of thousands of tons of iron and steel products are on loaded cars in Eastern railroad yards waiting for ships that can take their contents and allow them to be unloaded. The railroad situation in Pittsburgh, Youngstown, Wheeling and other nearby districts was about as bad and many

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Jan. 23, 1918	Jan. 16, 1918	Dec. 24, 1917	Jan. 24, 1917
No. 2 X, Philadelphia...	\$34.25	\$34.25	\$34.25	\$30.50
No. 2, Valley furnace...	33.00	33.00	33.00	31.00
No. 2 Southern, Cin'ti...	35.90	35.90	35.90	25.90
No. 2, Birmingham, Ala...	33.00	33.00	33.00	23.00
No. 2, furnace, Chicago*	33.00	33.00	33.00	30.00
Basic, del'd, eastern Pa...	33.75	33.75	33.75	30.00
Basic, Valley furnace...	33.00	33.00	33.00	30.00
Bessemer, Pittsburgh...	37.25	37.25	37.25	35.95
Malleable Bess., Ch'go*...	33.50	33.50	33.50	31.00
Gray forge, Pittsburgh...	32.75	32.75	32.75	29.95
L. S. charcoal, Chicago...	37.50	37.50	37.50	31.75

Rails, Billets, etc. Per Gross Ton:

Bess. rails, heavy, at mill	\$55.00	\$55.00	....	\$38.00
O.-h. rails, heavy, at mill	57.00	57.00	....	40.00
Bess. billets, Pittsburgh...	47.50	47.50	\$47.50	65.00
O.-h. billets, Pittsburgh...	47.50	47.50	47.50	65.00
O.-h. sheet bars, P'gh...	51.00	51.00	51.00	65.00*
Forging billets, base, P'gh	60.00	60.00	60.00	80.00
O.-h. billets, Phila...	50.50	50.50	50.50	60.00
Wire rods, Pittsburgh...	57.00	57.00	57.00	75.00

Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	3.685	3.685	3.685	3.159
Iron bars, Pittsburgh...	3.50	3.50	3.50	3.25
Iron bars, Chicago....	3.50	3.50	3.50	3.00
Steel bars, Pittsburgh...	2.90	2.90	2.90	3.25
Steel bars, New York...	3.095	3.095	3.095	3.419
Tank plates, Pittsburgh...	3.25	3.25	3.25	4.50
Tank plates, New York...	3.445	3.445	3.445	4.669
Beams, etc., Pittsburgh...	3.00	3.00	3.00	3.25
Beams, etc., New York...	3.195	3.195	3.195	3.419
Skelp, grooved steel, P'gh	2.90	2.90	2.90	2.85
Skelp, sheared steel, P'gh	3.25	3.25	3.25	3.00
Steel hoops, Pittsburgh...	3.50	3.50	3.50	3.25

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

thousands of tons of finished steel are piled up in the warehouses of the mills waiting to get cars. It is too early yet to measure the success of the shutdown movement, but here and there are reports of slightly better movement in cars, which it is hoped are true. The loss in output of semi-finished steel and finished products by the shutdown cannot be even approximately estimated and all figures put out from different sources are purely guesswork and unreliable. Many steel concerns operated their open-hearth furnaces and piled the cold ingots, these to be reheated and rolled down on the blooming mills later. Exemptions to large steel companies in the Pittsburgh and Youngstown districts were numerous and most of these were in operation again on Friday and Saturday of last week. Some smaller plants that were exempted did not get started until Monday morning, as the men refused to come out to work on Saturday. The shutdown order simply put a stop to any new business in iron or steel, and the market during the past week was lifeless. Producers are not trying to sell, as they cannot get cars in which to ship out material already made and ready to ship to customers who need it so badly. The success of the shutdown movement was no doubt hampered to a very large extent by the extremely cold weather, which came just after the shutdown orders were sent out. On last Saturday and Sunday the thermometer in the Pittsburgh and outlying districts was below zero, there were also heavy snows, and this all tended to make the moving of cars much more difficult. If it should prove that the shutdown movement relieved the railroad congestion to any large extent, it would not be surprising if more shutdown orders are issued. However, the Government will likely wait for the result of the first shutdown before ordering any other.

Pig Iron.—The local pig iron market is practically lifeless as regards sales and has been for some weeks. All the steel companies that have their own blast furnaces are badly in need of iron, but have stopped sending out inquiries, as they know it is useless to do so, as they will not get the iron so badly needed. Reports of purchases of Bessemer by the Youngstown Sheet & Tube Co. have been greatly magnified. This concern

Sheets, Nails and Wire,	Jan. 23, 1918	Jan. 16, 1918	Dec. 24, 1917	Jan. 24, 1917
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh	5.00	5.00	5.00	4.50
Sheets, galv., No. 28, P'gh	6.25	6.25	6.25	6.25
Wire nails, Pittsburgh...	3.50	3.50	3.50	3.00
Cut nails, Pittsburgh...	4.00	4.00	4.00	2.95
Fence wire, base, P'gh...	3.25	3.25	3.25	2.95
Barb wire, galv., P'gh...	4.35	4.35	4.35	3.85

Old Material: Per Gross Ton:

Carwheels, Chicago ...	\$30.00	\$30.00	\$33.00	\$18.50
Carwheels, Philadelphia...	30.00	30.00	30.00	21.00
Heavy steel scrap, P'gh.	30.00	30.00	30.00	23.00
Heavy steel scrap, Phila.	30.00	30.00	29.00	21.00
Heavy steel scrap, Ch'go	30.00	30.00	28.50	21.00
No. 1 cast, Pittsburgh...	30.00	30.00	30.00	19.00
No. 1 cast, Philadelphia...	30.00	30.00	30.00	20.00
No. 1 cast, Ch'go (net ton)	26.00	26.00	25.50	15.50
No. 1 RR. wrot, Phila...	35.00	35.00	35.00	26.00
No. 1 RR. wrot, Ch'go (net)	31.25	31.25	31.25	23.50

Coke, Connellsville, Per Net Ton at Oven:

Furnace coke, prompt...	\$6.00	\$6.00	\$6.00	\$8.50
Furnace coke, future...	6.00	6.00	6.00	6.00
Foundry coke, prompt...	7.00	7.00	7.00	10.00
Foundry coke, future...	7.00	7.00	7.00	7.00

Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York...	23.50	23.50	23.50	31.00
Electrolytic copper, N. Y.	23.50	23.50	23.50	31.00
Spelter, St. Louis...	7.62 1/2	7.75	7.75	9.87 1/2
Spelter, New York...	7.87 1/2	8.00	8.00	10.12 1/2
Lead, St. Louis...	6.85	6.85	6.35	7.62 1/2
Lead, New York...	7.00	7.00	6.50	7.75
Tin, New York...	\$6.00	85.00	85.50	45.50
Antimony (Asiatic), N. Y.	14.00	14.00	15.00	15.00
Tin plate, 100-lb. box, P'gh.	\$7.75	\$7.75	\$7.75	\$7.00

was able to pick up about 50 cars of loaded Bessemer iron, about 2500 tons, for which it paid the fall price of \$36.30 at Valley furnace. In the Pittsburgh district nearly half the blast furnaces are banked for lack of coke, while those in blast are making a poor quality of iron and a very limited output, due to the poor coke which they are getting, which they must take in or do without entirely. Early last week the Carnegie Steel Co. had 33 blast furnaces operating, and 36 out of blast and banked for lack of coke. The National Tube Co. has one Monongahela stack down and two at Lorain, Ohio. Output of pig iron in the Pittsburgh and nearby districts is not over 60 to 65 per cent of normal. We do not hear of any sales in the past week, and repeat regular prices as fixed by the Government.

We quote as follows: Basic pig iron, \$33; Bessemer, \$36.30; gray forge, \$32; No. 2 foundry, \$33; No. 3 foundry, \$32.50, and malleable Bessemer, \$33.50, all per gross ton at Valley furnace, the freight rate for delivery in the Cleveland and Pittsburgh districts being 95c. per ton.

Billets and Sheet Bars.—All the Bessemer and open-hearth steel plants were exempted from the five day shutdown order and most of them continued in operation right along. At first it was thought the shutdown order meant the steel plants as well and the Carnegie Steel Co., Jones & Laughlin Steel Co., Youngstown Sheet & Tube Co., Brier Hill Steel Co., Republic Iron & Steel Co., La Belle and others shut down their steel plants Thursday night, but on Friday the exemptions came in and they were started again as soon as possible. Probably 75 per cent of the output of steel by the Carnegie Steel Co. is going into plates, tin plate and other war material. Hence this concern piled very few cold ingots. This is also true of the Jones & Laughlin Steel Co. The Youngstown Sheet & Tube Co., Brier Hill Steel Co., and Republic Iron & Steel Co. have been engaged for months on large Government orders for shell steel, and they too likely piled up very little steel. Consumers of semi-finished steel such as the tin plate and sheet mills report deliveries very bad, due to the large falling off in output of steel by all the mills on account of the scarcity of pig iron and also because of the railroad congestion. Several of the larger tin mills

report they have only two or three days' supply of steel on hand. It is certain that the output of ingots in the Pittsburgh district and probably in the Youngstown district as well is not over 75 per cent of normal, and it may be running much lower.

We quote 4 x 4 in. soft Bessemer and open-hearth billets at \$47.50, sheet bars \$51, forging ingots \$73, and forging billets \$60 base, all f.o.b. at mill, Pittsburgh or Youngstown.

Ferroalloys.—The market during the past week was very dull owing largely to the confusion caused by the five-day shut-down order. Furnaces making ferrosilicon and ferromanganese are getting behind in deliveries as they cannot get cars. Makers of those ferroalloys on which prices were fixed do not care to sell for delivery beyond this quarter, owing to a possible revision in prices by the Government about April 1. A sale is reported of about 100 tons of 50 per cent ferrosilicon for this quarter at about \$165, delivered. We quote 80 per cent domestic ferromanganese very firm at \$250, delivered; 18 to 22 per cent spiegeleisen at \$60 to \$65, delivered, and 50 per cent ferrosilicon at \$165 to \$170, delivered.

We now quote 9 per cent Bessemer ferrosilicon at \$54, 10 per cent \$55, 11 per cent \$58.30, 12 per cent \$61.60. We quote 6 per cent silvery iron \$40, 7 per cent \$42, 8 per cent \$44.50, 9 per cent \$47, 10 per cent \$50. Three dollars per gross ton advance for each 1 per cent silicon for 11 per cent and over. All the above prices are f.o.b. maker's furnace, Jackson or New Straitsville, Ohio, these furnaces having a uniform freight rate of \$2 per gross ton, for delivery in the Pittsburgh district.

Structural Material.—Local fabricators report the new inquiry very dull. There is no incentive for large financial interests to undertake the erection of new steel structures owing to the high cost of labor and material and the unsatisfactory deliveries. Railroads are placing very little new business and most of this is for work that absolutely has to be done. Local fabricators say they are not very anxious to take on any more new work, as they are pretty well filled up over the first half of this year. The only inquiry in this market is one for 500 tons for a new building for the Defiance Machine Co. at Defiance, Ohio, and it is said this job has been deferred. We quote beams and channels up to 15 in. at 3c. at mills.

Plates.—It is evident that the situation in plates as regards delivery is easing up. The two local steel car builders say that deliveries of plates are better than for some time. The quantity of plates being offered for prompt shipment by the smaller mills is also said to be getting larger. No new inquiries are out for steel cars, and it is not believed that the Government intends to place heavy orders, as reported it would when it took over the railroads. The Pressed Steel Car Co. and the Standard Steel Car Co. are both working on Government steel cars placed some time ago but say they have received no new Government orders. Work on the contract for cars for Russia was stopped some time ago. Both the above named concerns are furnishing very large quantities of shell steel and other war materials. We quote 1/2 in. and heavier sheared plates at 3.25c. f.o.b. mill Pittsburgh.

Steel Rails.—The Cambria Steel Co. is taking some fair sized orders for both Bessemer and open-hearth standard sections at the reported price of \$65 for Bessemer and \$67 to \$68 for open hearth. Little is being done in light rails. We quote Bessemer standard sections at \$63 to \$65 and open hearth at \$67 to \$68 per gross ton at mill. The Government price on light rails is \$3 per 100 lb. for sections from 25 lb. to 45 lb. at mill.

Sheets.—The Government is still an enormously heavy buyer of sheets and last week placed about 30,000 tons of blue annealed and Bessemer black sheets with the mills through a sub-committee on sheet steel products. Of this order, the leading interest is said to have taken 11,000 to 12,000, the remainder going to five or six other mills. The Government also has another inquiry out for 12,000 tons of sheets which will likely be placed with the mills in a very short time. The domestic demand for sheets is quiet, most consumers being covered over this quarter, and some for the first half of this year. Sheet mills that confine their sales to first quarter do not care to sell for second

quarter until they know whether prices are likely to be revised about April 1. If a revision in prices on sheets is made, it will certainly be to a lower basis, and both the mills and consumers are holding off for this reason. Prices on sheets as fixed by the Government are very firm and are given on page 283. The sheet mills all lost five days' output on account of the recent shut-down order, the American Sheet & Tin Plate Co. partly operating one small mill that was rolling war material. No estimate is available of the tonnage in sheets lost by reason of the five-day shut-down.

Tin Plate.—The mills rolling tin plate to be made into food containers were exempt from the recent five-day shutdown and would not have lost any time whatever except for the fact that the exemptions were not received until Friday. Some mills which had shut down Thursday midnight could not get started until Saturday and a few until Monday morning this week, as the men refused to report for work on Saturday. Several months ago the tin mills made an agreement under which they expected they would receive a minimum of 5,000,000 boxes of tin plate for the needs of the Allies, but so far orders for only a small part of these 5,000,000 boxes have been given out by the Government, and for this reason the tin mills are looking for heavy Government orders to be placed in the near future. There is a continued scarcity in supply of sheet bars, some of the larger tin mills only having enough on hand for two or three days' run. However, the tin mills are making a good record and are said to be operating at present to 85 per cent or 90 per cent of normal capacity. There is a brisk export inquiry, but very few mills are quoting on account of the railroad embargoes and the trouble in getting bottoms. Some fairly large lots of tin plate have been shipped lately to the Orient by way of the Pacific Coast. We quote tin plate in large and small lots at \$7.75 per base box at mill rolled from Bessemer or open hearth stock. Prices on terne plates are given on page 283.

Iron and Steel Bars.—Mills report a fairly heavy demand for both iron and steel bars and are filled up over first quarter and some of the larger steel bar mills over first half of this year or longer. The Government is a heavy buyer of iron bars and two mills in this district that are working largely on Government orders were exempted from the five-day shutdown order. Reports are that the Government lately placed another large order for steel rounds among three or four mills in this district. We quote steel bars rolled from old steel rails at 3c., from steel billets 2.90c. and refined iron bars 3.50c., f.o.b. mill, Pittsburgh.

Rods.—There is an active export and domestic demand for rods much larger than the supply, which is very limited. Some fairly large contracts for rods for shipment to the Orient have lately been taken by local makers, these going by way of the Pacific Coast. Two local makers of rods are out of the market as sellers, but quote occasionally on inquiries for high carbon rods. The shortage of steel is cutting down output of rods very materially and a good many thousand tons are piled in warehouses of the mills awaiting cars for shipment. Prices on rods are given in detail on page 283.

Wire Products.—The new demand for wire and wire nails is only fair, mills not being anxious to sell for delivery beyond March 31, as prices may possibly be revised on that date to a lower basis and consumers are holding off from taking orders for the same reasons. Jobbers are not carrying as large stocks as usual, and this is also true of the retail trade. The Government has an inquiry out for 20,000 kegs of wire nails and it is expected the order will be divided among the mills in a short time, the larger part to go to the leading interest. One leading mill quoted \$3.50 base on this inquiry for delivery in first and second quarters, but with a provision that the price fixed by the Government should rule for second quarter delivery. Prices on wire products are given in detail on page 283.

Nuts and Bolts.—Only a part of the inquiry for 40,000,000 bolts for the Jeffersonville, Ind., arsenal that came out about a month ago has been distributed, but the remainder is expected to be given out in a short

time. It is said the Government will soon send out, or already has done so, another inquiry for a similar quantity of bolts for delivery about second quarter. Probably 90 per cent or more of the new business being given out in nuts and bolts is for the Government the new demand from general consumers being dull and has been for some time. Discounts on nuts and bolts, as fixed by the Government, are given on page 283.

Rivets.—The general demand is quiet and has been for several months, probably 75 per cent or more of the new business in rivets in the past three months having been placed by the Government. The demand from shipbuilding concerns working on Government orders for ships is very heavy, and rivet makers say their output is well sold up for the next three or four months. We quote structural rivets at \$4.65 and cone head boiler rivets at \$4.75 per 100 pound, f.o.b. Pittsburgh.

Hoops and Bands.—The new domestic demand for both hoops and bands is only fair, most consumers being covered over this quarter and for the first half of the year. The Government is a regular buyer of hoops, and has lately placed some fair sized orders for Government work in this country and also to be used in war buildings now going up in France. We quote steel hoops at 3.50c. and steel bands at 2.90c., extras on the latter as per the steel bar card f.o.b. Pittsburgh.

Shafting.—Fully 75 per cent or more of the new buying in shafting for the past three or four months has been done by the Government, the new demand from other consumers being very dull. The automobile builders are buying very little and the demand from the screw stock machine trade is also quiet. We quote cold rolled shafting in large or small lots at 17 per cent off list f.o.b. Pittsburgh.

Cold-Rolled Strip Steel.—The new demand is quiet and some of the larger consumers that formerly bought heavily are placing orders only for small lots. Makers and consumers alike anticipate a possible revision in prices on cold rolled strip steel to a lower basis effective from March 31 and for this reason are not doing any business for second quarter delivery.

We quote cold-rolled strip steel at \$6.50 per 100 lb., f.o.b. Pittsburgh, terms 30 days, less 2 per cent for cash in 10 days, when sold in quantities of 300 lb. or more.

Wrought Pipe.—Practically all the mills in Pittsburgh, Youngstown and Wheeling districts that roll tubular goods were closed in all departments from midnight on Thursday of last week until midnight on Tuesday of this week and some mills did not get started until Wednesday morning. The National Tube Co. lost about five days' production and other mills the same. The only exemptions made were of mills that were rolling Government material on direct orders. The Philadelphia Co. of this city recently divided about 8000 tons of steel pipe and about 5000 of iron pipe among four or five mills. This concern has inquiries out for nearly 1700 tons more, and this may be placed in a short time. All the mills making iron or steel pipe are filled up for the first half of this year and some for a longer period. Output is cut down very much by the shortage in steel, and cars can hardly be had. Very heavy stocks are piled in warehouses awaiting cars for shipment and the outlook for betterment is poor. Discounts on iron and steel pipe are given on page 283.

Boiler Tubes.—With a loss of five days in operation, the conditions of the market on iron steel boiler tubes has grown worse, and deliveries by the mills are very slow. Output is probably not more than 50 per cent of normal due to the shortage in steel and fuel. Several works of the National Tube Co. are down for lack of coal. Makers of iron and steel boiler tubes are sold up for many months, and have no material to sell for delivery before late this week. The Government is still placing heavy orders for iron and steel tubes and also for seamless tubes on which the mills are making the best deliveries they can. Discounts on iron and steel tubes are given on page 283.

Coke.—Operating conditions in the coke trade are no better and are probably worse. All last week the supply of cars was only 30 to 36 per cent of normal and many plants were either closed entirely or partially

idle, waiting for cars to ship coke piled on the ground. One leading coke plant in the Connellsville region received last week only eight cars, but this is probably an exceptional case. The supply of cars on Monday this week was 30 per cent, on Tuesday about 35 per cent, and the outlook for the rest of the week for more cars is not very good. No new sales of coke are being made, as the small supply of cars does not allow any free coke to accumulate and none is being offered. Coke producers are trying to make shipments on contracts rather than attempt to make new sales. The supply of labor is reported good, and with the high prices ruling for coke the situation would be ideal if the car supply was ample to meet the needs. We quote blast furnace coke at \$6, 72-hr. foundry at \$7 and crushed coke from 1-in. size at \$7.30, all in net tons at ovens. The *Connellsville Courier* gives the output of coke in the upper and lower Connellsville regions for the week ending Jan. 12 as 237,707 tons, an increase over the previous week of 21,609 tons. When conditions are favorable for operating, the coke output of the two Connellsville regions will run about 425,000 tons per week, so that it can be readily seen how much the output has fallen off.

Old Material.—Under the ruling made late in December by the Committee of Steel and Steel Products of the American Iron and Steel Institute, the price of No. 1 busheling scrap was put at \$35.00 per gross ton delivered to consumers' mills. This was a very great surprise to the scrap trade, and the price has been the cause of more or less confusion, especially to concerns which had contracts for the purchase and sale of scrap material based on quotations in the Pittsburgh report in the IRON AGE. We deemed the right thing to do to carry this price of \$35.00 per gross ton on No. 1 busheling until it was fully demonstrated whether it was the real price or an artificial one. The latter has been the case, and in our report printed in the issue of the IRON AGE of Jan. 17 we put the price of No. 1 busheling scrap at \$27 to \$28 per gross ton, as we were advised by reliable dealers it would not be possible to get more than the higher price quoted, if that much. We make this explanation in order that the trade will understand the reason for the drop in one week in prices of No. 1 busheling of \$8 per ton. In fact, the amount of busheling scrap sold in the Pittsburgh district each year is very small, there being only three bar iron mills in the Pittsburgh district. One of these does not buy busheling scrap at all, and the other two buy only limited amounts. General conditions in the scrap trade here show no change over those noted for some weeks past. It is almost impossible for dealers to do any business, as cars cannot be obtained, and the embargoes prevent the shipment of scrap to nearly all consuming points. Whether the shutdown movement will help the car supply has yet to be shown. It is not any better and, if anything, it is worse. Consumers are badly in need of scrap, and their stocks are very low. Prices are firm, but there is practically no new selling. Prices on iron and steel scrap for delivery in the Pittsburgh and other districts that take Pittsburgh freight are as follows:

Heavy steel melting scrap, Steubenville, Fol- lansbee, Brackenridge, Monessen, Midland and Pittsburgh, delivered.....	\$30.00
No. 1 foundry cast.....	30.00
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., Franklin, Pa., and Pitts- burgh.....	35.00
Hydraulic compressed sheet scrap.....	\$26.00 to 27.00
Bundled sheet scrap, sides and ends, f.o.b. consumers' mill, Pittsburgh district.....	24.00 to 25.00
Bundled sheet stamping scrap.....	22.00 to 23.00
No. 1 railroad malleable stock.....	30.00
Railroad grate bars.....	19.00 to 20.00
Low phosphorus melting stock.....	40.00
Iron car axles.....	47.50
Steel car axles.....	47.50
Locomotive axles, steel.....	47.50
No. 1 busheling scrap.....	27.00 to 28.00
Machine shop turnings.....	20.00
Cast iron wheels.....	30.00
Rolled steel wheels.....	20.00
*Sheet bar crop ends.....	39.00 to 40.00
Cast iron borings.....	20.00
No. 1 railroad wrought scrap.....	35.00
Heavy steel axle turnings.....	25.00 to 26.00
Heavy breakable cast scrap.....	30.00

*Shipping point.

Chicago

CHICAGO, Jan. 22—(By Wire.)

For about 10 days local steel mills have produced but little or nothing for the Government or for the private consumer, especially the latter. Snow and storms which blocked the arrival of fuel constituted the first detriment to production, then came the edict of the Fuel Administrator, the results of which are treated elsewhere in this issue. At midnight to-night manufacture for domestic use will be resumed, but to a restricted degree. Purchasing has been light. The producers of finished materials are putting more emphasis on the unfavorable side of the Government requirement that prices which figure in contracts extending beyond the first quarter must be subject to revision. Makers of pig iron also are greatly disturbed over the required stipulation. One Southern producer has been reserving the right to cancel contracts should self-protection direct that step. The leading Northern maker of iron will decide this week as to its policy in the premises. Meanwhile the inquiry for last half pig iron is heavy. With the steel mills, another disturbing feature is that the Navy Department apparently does not accept all the fixed prices which have been announced, and is asking for bids on various materials which other agencies of the Government have merely allotted without questioning the fixed prices. It appears that Navy officials recognize only those prices as official which were directly and specifically approved by the President. There is some criticism of Washington asking mills in this territory for bids on bars and other materials, inasmuch as mills nearer the seaboard are in a better position to supply what is wanted and their doing so would lessen the length of the hauls.

Pig Iron.—Inquiry for the last half is heavy, and sales of Southern iron for that period comprise a large aggregate. More would have been done were it not for the price revision clause which the Government requires in contracts extending beyond the first quarter. One Southern maker has been for some time selling ahead regardless of the clause. Another has inserted in contracts a proviso enabling the furnace to cancel, and the leading Northern producer has held up selling pending decision on some definite policy. It expects to be in a position to proceed by the latter part of this week, and it is not improbable that a uniform contract will be adopted by all sellers. Aside from being willing to buy for the last half, consumers have let it be known that they need foundry iron for the second quarter. The Chain Belt Co., Milwaukee, is inquiring for 6000 tons of iron for second, third and fourth quarter delivery, wanting 3500 tons of foundry and 2500 tons of malleable. The Nash Motors Co., Kenosha, Wis., has inquired and the Case Threshing Machine Co., Racine, recently invited bids on 1700 tons of silvery iron, but with little success. The Ohio silvers are nearly all absorbed by the Government. There is a good volume of malleable inquiry. The Worthington Pump & Machinery Corporation is inquiring for charcoal iron. A furnace of the Wisconsin Steel Co. was blown in to-day, making two in blast. The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable Bessemer and basic irons, which are f.o.b. furnace, and do not include a switching charge averaging 50c. per ton:

Lake Superior charcoal, Nos. 2 to 5	\$37.50
Lake Superior charcoal, No. 6 and Scotch	40.00
Northern coke foundry, No. 1	33.50
Northern coke foundry, No. 2	33.00
Northern coke foundry, No. 3	32.50
Northern high-phosphorus foundry	33.00
Southern coke No. 1 foundry and No. 1 soft	38.50
Southern coke No. 2 foundry	37.00
Malleable Bessemer	33.50
Basic	33.00
Low phosphorus (copper free)	53.00
Silvery 7 per cent	44.54

Ferroalloys.—Eighty per cent ferromanganese is strong at \$250, delivered; 20 per cent spiegeleisen is stronger at \$59 to \$60, Eastern furnace.

Plates.—An Ohio mill has booked a fairly good tonnage of plates, 72 in. and under in width. Otherwise there is but little to report. The leading independent

is not selling. An Eastern maker, which has lately been selling in this market, is not anxious to sell since its production has been cut down by storms and Government decree. The local mills are doing their utmost on plates for the Government. The mill quotation is 3.25c. Jobbers quote 4.45c. for shipments from stock.

Structural Material.—The situation in shapes is much the same as that in plates. No lettings of fabricated work are announced this week, but still pending is the big job for Butler Brothers, which will require between 7000 and 9000 tons. The official mill price is 3c., if a seller can be found. The Government is taking bids on 4000 standard gage freight cars and 400 narrow gage, the latter presumably for use in France. Jobbing quotations are unchanged at 4.20c.

Bars.—Mild steel bars share the common dullness. An Eastern maker has turned down inquiries, and the leading local independent does not want to sell beyond the first quarter because of the fact that prices beyond March 31 are unknown quantities. The makers of rail carbon bars have been at a standstill for the last five days, which is somewhat offset by the slow demand for their product, the official price of which is 3c., plus extras. Common bar iron at 3.50c. has been fairly active of late, although the bad weather has interfered with its movement. Warehouse prices are unchanged, as follows:

Soft steel bars, 4.10c.; bar iron, 4.10c.; reinforcing bars, 4.10c. base, with 5c. extra for twisting sizes $\frac{1}{2}$ in. and over and usual card extras for smaller sizes; shafting, list plus 10 per cent.

Wire Products.—To storm difficulties was added restricted production by order of the Fuel Administrator. Otherwise the situation is without change. We quote prices at Government levels as follows:

Nails, \$3.50, Pittsburgh; plain fence wire, \$3.25; painted barb wire, \$3.65; galvanized barb wire, \$4.35; polished staples, \$3.65, and galvanized staples, \$4.35.

Rails and Track Supplies.—The demand for light rails is rather lively. Prices are as follows:

Standard railroad spikes 4.11 $\frac{1}{2}$ c., Chicago. Track bolts, with square nuts, 5.11 $\frac{1}{2}$ c., Chicago. Tie plates, 3.25c., f.o.b. maker's mill. The base for light rails is 3c., f.o.b. maker's mill for 25 to 45-lb. sections, lighter sections taking Government extras.

Sheets.—Since Saturday last, the leading local independent has had one large merchant mill on sheets for the Government. Otherwise it has not been making any. It has suspended selling. An Ohio mill is taking business in limited quantities on all grades, although it cannot supply the lighter gages. We quote No. 28 black at 5c.; No. 10 blue annealed at 4.25c. and No. 28 galvanized at 6.25c. Warehouse prices are unchanged.

We quote for Chicago delivery out of stock, regardless of quantity, as follows: No. 10 blue annealed, 5.45c.; No. 28 black, 6.45c., and No. 28 galvanized, 7.70c.

Cast Iron Pipe.—The 200 tons for which Bay City, Mich., inquired was placed with R. D. Wood & Co. No new inquiries have developed.

Quotations per net ton, Chicago, are as follows: Water pipe, 4-in., \$57.30; 6-in. and larger, \$54.30, with \$1 extra for Class A water pipe and gas pipe.

Bolts and Nuts.—The present shortage of men and raw material makes it appear that the industry can hardly run over 60 per cent, and the recent shutdown will tend to accentuate the scarcity of material. Jobbers and consumers are holding off in placing their orders and this may lead to a serious congestion when spring buying comes along. For prices and freight rates see finished iron and steel Pittsburgh. Jobbers quote as follows:

Structural rivets, 5.50c.; boiler rivets, 5.60c.; machine bolts up to $\frac{1}{2}$ x 4 in., 40 and 10 per cent off; larger sizes, 35 and 5 off; carriage bolts up to $\frac{1}{2}$ x 6 in., 40 and 2 $\frac{1}{2}$ off; larger sizes, 30 and 5 off; hot pressed nuts, square tapped, 1.05 off, and hexagon tapped, 85c. off per 100 lb.; coach or lag screws, gimlet points, square heads, 50 per cent off.

Old Material.—The conditions of last week combined to make a dull market. It is not reported that any mill is as yet actually short of scrap, but the car situation is getting worse every day and the necessity for using box cars is growing. The scrap yards were well nigh put out of business by the recent snow. Meanwhile prices are firm, with no changes from last week's levels reported. Small lists have been issued by the Michigan Central, Rock Island and Monon Route. Brokers are legally entitled to a commission of 3 $\frac{1}{2}$ per cent on the maximum

price. We quote for delivery in buyer's yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Old iron rails	\$38.00 to \$39.00
Relaying rails	60.00
Old carwheels	30.00
Old steel rails, rerolling	35.00
Old steel rails, less than 3 ft.	34.00 to 35.00
Heavy melting steel	30.00
Heavy melting steel, cut short lengths	33.00
Frogs, switches and guards, cut apart	30.00
Shoveling steel	30.00
Steel axle turnings	25.00 to 26.00

Per Net Ton	
Iron angles and splice bars	\$37.00 to \$38.00
Iron arch bars and transoms	39.00 to 40.00
Steel angle bars	28.00 to 29.00
Iron car axles	47.00 to 48.00
Steel car axles	42.42
No. 1 railroad wrought	31.25
No. 2 railroad wrought	30.50 to 31.00
Cut forge	30.50 to 31.00
Pipes and flues	24.00 to 24.50
No. 1 busheling	26.00 to 27.00
No. 2 busheling	18.00 to 19.00
Steel knuckles and couplers	33.50 to 34.50
Coll springs	37.00
No. 1 boilers, cut to sheets and rings	22.00 to 23.00
Boiler punchings	31.00 to 32.00
Locomotive tires, smooth	36.50 to 37.50
Machine-shop turnings	17.00 to 17.50
Cast borings	16.50 to 17.00
No. 1 cast scrap	26.00 to 26.75
Stove plate and light cast scrap	21.50 to 22.50
Grate bars	21.50 to 22.50
Brake shoes	24.00 to 25.00
Railroad malleable	26.80
Agricultural malleable	25.00 to 26.00
Country mixed scrap	21.50 to 22.50

Cincinnati

CINCINNATI, Jan. 22—(By Wire.)

Pig Iron.—The furnaces are running farther behind on shipments. In the Hanging Rock district, production has been materially reduced on account of the coke shortage and the extremely cold weather. In the South production is some better, but embargoes against shipments north of the Ohio River limit territory to which iron from that district can be forwarded. A few furnaces there will take on business for last half shipment and a limited number of small contracts have been made. However, other producers are unwilling to commit themselves that far ahead. In the Ironton district none will consider opening its books for any delivery. In the South some high sulphur iron can be had for shipment before April 1, but consumers are not ordering any. The inquiry is fairly good for the last half, but melters are not always able to get the iron wanted. The five day shutdown period was calculated to relieve the local foundry coke and iron shortage, but two or three foundries on the Ohio side of the river will not be able to start up Wednesday as contemplated. Even after a car of coke or iron reaches the Cincinnati yards, it is hard to move on account of frozen switches and other troubles incident to the severe weather. Virginia furnaces are probably in better condition than those in other fields, but the embargoes on shipments to this territory are affecting them the same as the Birmingham producers. No Ohio silvery iron can be had for any delivery and shipments on former contracts are practically cut off. Based on freight rates of \$2.90 Birmingham and \$1.26 Ironton, we quote f.o.b. Cincinnati as follows:

Southern coke, No. 2 foundry and 2 soft	\$35.90
Southern Ohio coke, No. 2	34.26
Basic, Northern	34.26

Coke.—Without exception, dealers advise that there is neither any furnace nor foundry coke to offer for prompt shipment, and precious little for future delivery. Severe weather conditions further delay shipments already on the way. Reports from different fields state that cars are scarcer, while it is almost impossible to obtain labor in anything like a sufficient supply. Coke dealers are now devoting all their time to tracing shipments en route, but are meeting with scant success in their efforts. The movement from the Connellsville field is especially slow.

Finished Material.—The jobbers are receiving a number of orders for twisted steel bars, small structural shapes, plates and cold rolled shafting, but on account of the railroad embargoes they are not able to make shipment of the material wanted. Local business is light, but is better than could be expected during the

present cold spell. Shipments from the mills have been practically cut off, although warehouse stocks are still in fairly good shape. This is especially true of wire nail stocks. The mill price on No. 28 black sheets is 5.18½c., and No. 28 galvanized 6.43½c. Jobbers' prices are unchanged as follows: Iron and steel bars, 4.08½c.; twisted bars, ¾ x 1¼-in., 4.23½c.; ½-in., 4.33½c.; ½-in., 4.43½c.; ¾-in., 4.63½c., and 1¼-in., 4.88½c. Structural shapes are quoted at 4.18½c.; plates, ¼-in. and heavier, 4.43½c.; No. 10 blue annealed sheets, 5.43½c. Cold-rolled shafting is sold at 10 per cent discount.

Old Material.—A little No. 1 machinery cast scrap was sold last week and brought as high as \$26 per net ton. However, the market is not yet established at this figure. No shipments can be made to the Pittsburgh district, and, in fact, embargoes are on against all consuming points of consequence. All local yards are closed today, and most of them will remain closed through Tuesday. No incoming shipments have been received lately, with the exception of a few cars of railroad scrap. The following are dealers' prices f.o.b. southern Ohio and Cincinnati:

Per Gross Ton	
Bundled sheet scrap	\$19.00
Old iron rails	\$32.00 to 32.50
Relaying rails, 50 lb. and up	44.00 to 44.50
Rerolling steel rails	33.00 to 33.50
Heavy melting steel scrap	27.00
Steel rails for melting	27.00 to 27.50
Old carwheels	28.00

Per Net Ton	
No. 1 railroad wrought	\$29.00 to \$29.50
Cast borings	13.00 to 13.50
Steel turnings	13.00 to 13.50
Railroad cast	24.50 to 25.00
No. 1 machinery	25.00 to 25.50
Burnt scrap	15.00 to 15.50
Iron axles	40.00 to 40.50
Locomotive tires (smooth inside)	33.50 to 34.00
Pipes and flues	19.00 to 19.50
Malleable cast	23.50 to 24.00
Railroad tank and sheet	17.00 to 17.50

Birmingham

BIRMINGHAM, ALA., Jan. 22.

Pig Iron.—While there is still production, delivering and a little selling of iron going on, the Southern market conditions about the same as they have been at any time this year, there is considerable consternation noticeable. The furnace companies have been alarmed that the drastic orders looking to fuel conservation and equalization that has been on since Friday would disturb the iron and steel interests, while prior to the order there was some trouble in some sections of this territory on the fuel question anyway and the severe weather also caused trouble. All contracts being made now carry the clause that the Government is likely to revise the deals, either upward or downward, effective April 1. Some consumers are willing to make contracts, no matter what is likely to happen, if only they can get the order in. The production during the past week shows a slight falling off in the South. The first month of the year had a chance, it is believed, of being as good as it was in December, but all predictions now are that there will be a smaller tonnage. When word was received here of the drastic order of Fuel Administrator Garfield on the conservation of fuel for five days and then on Mondays for ten weeks furnace and steel making interests made investigations as to their being exempt under the rulings. Iron making and steel producing continued. Several of the foundries and machine shops of the immediate Birmingham district operate with power from the Alabama Power Co., a hydroelectric company, and there was operation until 4 p. m. daily and then after 7 p. m. in machine shops. Cast iron pipe plants and other industries in which iron and steel are daily consumed had to close down under the terms of the order, throwing out of employment a number of men. This also had an effect on the scrap iron and steel market and with the exception of two steel plants all delivery of scrap was ordered stopped for the time being. All pig iron sales continue on the Federal basis of \$33 per ton, No. 2 foundry, up to 2.25 silicon basis.

Coal and Coke.—Production is undisturbed in this section. Miners and mine workers are being urged to

bring about a larger output. Much unrest is noted among the union miners and mine workers because of effort of operators to get some modification on the proposals of the Federal Fuel Administration looking to an agreement on differences between operators and miners. Operators will be in Washington this week on the subject. The miners a few weeks ago adopted the proposals made by the Fuel Administrator. Coke production is about the same, just sufficient for the demands at home and a few contracts outside. New contracts are on the basis of early delivery.

Old Material.—The market is uncertain again. Following the publication of the drastic orders of the Fuel Administration on coal consumption, old material dealers received notice to hold back on deliveries on contracts of scrap iron and steel except to steel works. This affected the business considerably right from the start. Quotations held firmly, though, but dealers say that the stagnant business was not being enjoyed. Scrap prices are given as follows:

Old steel axles.....	\$32.00 to \$33.00
Old steel rails.....	28.00 to 30.00
Heavy melting steel.....	23.00 to 24.00
No. 1 railroad wrought.....	28.00 to 32.00
No. 1 cast.....	25.00 to 27.00
Stove plate.....	19.50 to 21.50
Old car wheels.....	25.00 to 30.00
Tramcar wheels.....	20.00 to 25.00
Machine shop turnings.....	17.00 to 18.00
Cast iron borings.....	13.00 to 15.00

Cleveland

CLEVELAND, Jan. 22—(By Wire.)

The five-day shutdown of industrial plants in northern Ohio has so far had no apparent effect, as the fuel situation in this territory shows no improvement and the supply of cars to Ohio mines is still very short. Weather conditions have continued very bad, with zero temperature for several days until to-day, and on account of the cold railroads have been unable to make much headway. While it is too early to tell how beneficial the five-day shutdown will prove, the consensus of opinion is that it ought to do some good. Operating heads of Ohio railroads to-day report that the congested condition of their systems is being relieved materially, and this should result in an improvement in the car situation and better movement of coal and other freight. With the two Otis plants in Cleveland and the United in Canton shut down for lack of coal, the situation in this territory in respect to the steel mills is worse than it had been previously.

The local coke situation shows no improvement. The American Steel & Wire Co. still has three out of five blast furnaces banked for lack of fuel, but other Cleveland furnaces are in operation. Dover furnace, banked several days ago, has resumed. Furnace operations in the Youngstown district have improved, and it is estimated that the output is now about 70 per cent of normal, as compared with 55 per cent two weeks ago.

Iron Ore.—Little activity has so far developed in the ore market in spite of the decision of sellers to take contracts at 1917 prices, subject to revision April 1. The curtailment of blast furnace operations has resulted in a change in the situation that will probably cause a slow buying movement. Under normal operating conditions many furnaces would have had only enough ore to last them until the opening of navigation, but with reduced output some will not need any of this season's ore before July. Sellers are not eager to book very much tonnage until the question of vessel rates is settled and the allotment of vessel tonnage under the new pool arrangement is made. Stocks on docks at Lake Erie port Jan. 1 were as follows:

	Gross Tons
Buffalo and Tonawanda	444,842
Erie	526,766
Conneaut	1,538,465
Ashtabula	3,357,973
Fairport	527,262
Cleveland	1,885,712
Lorain	1,026,106
Huron	555,455
Toledo	395,368
Total.....	10,257,949

Pig Iron.—The demand for pig iron for the last half in foundry and malleable grades is very active, but steel-making iron is quiet. One Cleveland interest sold about 40,000 tons during the week at prices subject to Government revision, and a good volume of inquiry in lots up to 4000 tons is pending. The 8000 tons of iron in various grades inquired for last week for the Navy Department is being distributed by the pig iron committee of the American Iron and Steel Institute. This committee also has an inquiry for 1000 tons of high phosphorus iron for Italy, and 800 tons of malleable iron for a Wisconsin plant, both for first quarter delivery. The demand for Southern iron has improved. We note the sale of several thousand tons, including two 1500-ton lots, to Cleveland consumers for the first half. Two producers are now taking orders in this territory for that delivery. The embargo on Southern iron shipments through Cincinnati continues, but some iron is being gotten through for Government work. We quote, f.o.b. Cleveland:

Bessemer	\$37.25
Basic	33.30
Northern No. 2 foundry	33.30
Southern No. 2 foundry	37.00
Gray forge	32.30
Ohio silvery, 8 per cent silicon.....	46.12
Standard low phosphorus, Valley furnace.....	50.00

Coke.—A Cleveland consumer has taken a round lot of by-product coke for the last half, the sale being approved by the Fuel Administrator. Virginia coke shipments are coming into this territory in fairly good shape, but shipments from the Connellsville district are very bad.

Old Material.—The five-day shutdown of steel mills and manufacturing plants producing scrap brought the market practically to a standstill and has led to the belief among dealers that there will be a slight weakening in prices. Few sales of heavy melting steel and cast scrap were made during the week before the closing down order was issued. The shutting down of the three Cleveland rolling mills has caused a slight decline in price of busheling scrap for which there is no demand from the mills, although one dealer is offering \$28 net for this grade. The quotation on busheling in this report of the issue of Jan. 17 which appeared under per net ton should have been listed as a gross ton price. A ruling recently given by the Scrap Iron Subcommittee of the American Iron and Steel Institute provides that a \$3 per ton charge for cutting material shall be made only when the material is actually cut to specified size, thus practically limiting this charge to material cut for use in hand-charged furnaces or in cupolas making semi-steel. Dealers quote f.o.b. Cleveland, as follows:

	Per Gross Ton
Steel rails	\$27.00 to \$28.00
Steel rails, rerolling	35.00
Steel rails, under 3 ft.....	34.50 to 35.50
Iron rails	35.00
Iron car axles	45.00 to 46.00
Steel car axles	45.00 to 46.00
Heavy melting steel	30.00
Cast borings	20.00
Iron and steel turnings	20.00
No. 1 railroad wrought	35.00
Hydraulic compressed steel scrap.....	26.50 to 27.50
Carwheels	30.00
Relaying rails, 50 lb. and over.....	50.00 to 60.00
Agricultural malleable	24.00 to 25.00
Railroad malleable	30.00
Steel axle turnings	23.00 to 24.00
Light bundled sheet scrap.....	24.50 to 25.00
No. 1 cast	30.00
No. 1 busheling	30.50 to 31.50

	Per Net Ton
Railroad grate bars.....	\$20.00 to \$21.00
Stove plate	20.00 to 21.00

Finished Iron and Steel.—Some of the agricultural implement manufacturers have come in the market for early requirements in both soft and hard steel bars, and are planning a large production this season. The Detroit automobile manufacturers are taking a more hopeful view of the situation than a few weeks ago, and some expect that they will be able to get out about 50 per cent of their normal output in cars. A fair volume of orders for steel for Government work is coming out, mostly for bars. A new inquiry for 1000 tons is pending. The demand for plates is not heavy, although a large number of small lot orders are being planned. Boiler plates are in good demand, but scarce. There is

a fair demand for sheets and a plentiful supply of blue sheets, but a scarcity of black and galvanized. The output of the Ohio sheet mills has been sharply curtailed by the coal shortage and lack of steel.

We quote warehouse prices as follows: Steel bars, 4.03 1/4c.; plates, 4.38 1/2c.; structural material, 4.13 1/2c.; No. 10 blue annealed sheets, 5.35c.; No. 28 black sheets, 6.35c.; No. 28 galvanized sheets, 7.60c.

Bolts, Nuts and Rivets.—The Quartermaster's Department of the Army is expected to place orders within a few days for 50,000,000 bolts, an inquiry for which was recently noted. Jobbers have not yet bought, and new demand is not active. A new inquiry for 1500 tons of rivets has come from the Navy Department and some other small Government inquiries. Rivet specifications are heavy.

At a meeting of the Central Division of the American Board of Scrap Iron Dealers held in Detroit, Mich., Jan. 15, C. A. Seeley of Cleveland was elected secretary, succeeding W. B. Friedman, who is now in the Government service.

St. Louis

ST. LOUIS, Jan. 23—(By Wire).

Pig Iron.—Sales reported include 10,000 tons of basic for last half by the local furnace, also small foundry lots aggregating 2000 tons for last half, the price subject to revision if the Government price changes, also with cancellation by furnace permitted if price is lowered below cost of production. In consequence of the continuance of conditions which have been detailed in previous reports, together with the results consequent upon the Fuel Administration's order and the serious conditions in traffic due to the storms of the past week there has been little of importance in the developments in the pig iron market. There is still existent the same insistent desire to place orders for future delivery, and probably 50,000 tons of various grades could be sold almost instantly if supplies were available. Foundrymen are becoming somewhat more resigned to the conditions, and only plants with Government orders are able to accomplish anything. The steel plants on the East side of the river have generally observed the Garfield closing order except where specifically exempted by reason of their work on hand, and the consequent saving of fuel as well as of traffic equipment will be large. But little difficulty is anticipated from the labor end of the situation, as the men generally have welcomed a lay-off and most of the plants have taken opportunity to make some needed repairs.

Coke.—The chief feature of the week has been the pressure for coke for domestic consumption both on existing contracts and for spot delivery, but the results have not been particularly satisfactory to the consumers. Traffic conditions have rendered it practically impossible to consider any business, according to representatives of the ovens, as even shipments known to be on the way could not be located in the storm. The situation is improving, however.

Finished Iron and Steel.—The severe weather has had the effect of reducing the immediate demand for material from the warehouses, but at that they have had about all they could attend to. No change is reported by the mill representatives in the future contract situation or in deliveries. Movement out of warehouse has been at these prices: Soft steel bars, 4.17c.; iron bars, 4.17c.; structural material, 4.27c.; tank plates, 4.52c.; No. 8 sheets, 5.47c.; No. 10 blue annealed sheets, 5.52c.; No. 28 black sheets, cold rolled, one pass, 6.52c.; No. 28 galvanized sheets, black sheet gage, 7.77c.

Old Material.—The scrap dealers have found it difficult to transact any business of consequence during the past week because of the car conditions and the general traffic situation because of the weather. The consumers are still unwilling to pay anything other than the Government figures, as is natural, while the holders of material are still indisposed to sell to the dealers

at a price which will enable them to make any profit. Consumers are expected to find it necessary to come into the market very shortly because of the condition of their yards and the demands of their contracts for their product, but until the traffic and weather situation is much better there will be very little business moving. Dealers generally are beginning to trade among themselves, but consumers are doing very little buying. We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district, as follows:

	Per Gross Ton
Old iron rails	\$36.00 to \$36.50
Old steel rails, rerolling	34.50 to 35.00
Old steel rails, less than 3 ft.	37.50 to 38.50
Relaying rails, standard section, subject to inspection	60.00 to 75.00
Old carwheels	29.50 to 30.00
No. 1 railroad heavy melting steel scrap	29.50 to 30.50
Heavy shoveling steel	27.50 to 28.00
Ordinary shoveling steel	26.00 to 27.00
Frogs, switches and guards cut apart	29.50 to 30.00
Ordinary bundled sheet scrap	24.00 to 24.50
Heavy axle and tire turnings	22.50 to 23.00
	Per Net Ton
Iron angle bars	\$35.50 to \$36.50
Steel angle bars	28.50 to 29.00
Iron car axles	45.50 to 46.00
Steel car axles	43.00 to 43.50
Wrought arch bars and transoms	41.50 to 42.00
No. 1 railroad wrought	30.50 to 31.00
No. 2 railroad wrought	29.50 to 30.00
Railroad springs	30.00 to 30.50
Steel couplers and knuckles	30.50 to 31.00
Locomotive tires, 42 in. and over, smooth inside	34.00 to 35.00
No. 1 dealers' forge	23.50 to 24.00
Cast iron borings	17.00 to 17.50
No. 1 busheling	25.50 to 26.00
No. 1 boilers, cut to sheets and rings	23.00 to 23.50
No. 1 railroad cast scrap	25.50 to 26.00
Stove plate and light cast scrap	20.50 to 21.00
Railroad malleable	26.00 to 26.50
Agricultural malleable	23.00 to 23.50
Pipes and flues	22.50 to 23.00
Railroad sheet and tank scrap	22.50 to 23.00
Railroad grate bars	19.00 to 19.50
Machine shop turnings	17.50 to 17.75
Country mixed scrap	20.50 to 21.00
Uncut railroad mixed scrap	23.50 to 24.00

Buffalo

BUFFALO, Jan. 19.

Pig Iron.—The demand for pig iron has been very heavy the past few days from all sections, with great scarcity reported by producers, there being practically no iron obtainable that can be delivered before July 1, with the exception of an occasional small lot of off-grade iron, resulting principally from the necessity of using, in some instances, an inferior grade of coke through inability to obtain better. Furnace production is being retarded on account of difficulty in obtaining regular shipment of coke, and many producers of iron are falling behind on contract shipments for this reason. Although furnacemen have been disinclined of late to contract for last-half product before the matter of price revision by the Government on April 1 has been determined, some of them are now showing more disposition to meet the demand of consumers for the more distant deliveries and are booking some tonnages with the price revision clause in contracts. Consequently, the aggregate bookings for the week have amounted to considerably more than in any week for some time past. The Canadian furnace at Port Colbourne reports strong demand and good business, but that orders are taken for first half only because of the present uncertain situation as regards coke deliveries and other undetermined elements of production cost.

The price schedule continues to be that established some time ago, based on the Government maximum, f.o.b. furnace, Buffalo, as follows:

No. 1 foundry	\$34.50
No. 2 X	33.50
No. 3 foundry	32.50
Gray forge	32.00
Malleable	33.50
Basic	33.00
Lake Superior charcoal, f.o.b. Buffalo	39.75

Finished Iron and Steel.—There has been sharp curtailment in production in finished products, due to shortage of fuel and congestion in railroad shipments. The congestion is felt particularly by the Lackawanna Steel Co.'s plant on account of embargoes in force on roads to the East and the clogging of storage space by

accumulation of finished material on which shipment cannot be made, and entirely aside from fuel administration orders. Considerable demand is noted from agricultural implement makers for bars and shapes for the coming season's requirements, and some tonnage of this character has been placed. Some additional tonnage of bars and shapes is also being placed on account of new war orders in Canada, principally bar material. Local demand is very quiet on all classes of material, for the reason that almost everything available is being diverted to war business.

Old Material.—The market is very strong and prices on some grades have advanced materially. There is a real famine in scrap materials, due principally to producers not being able to procure labor to classify and load. Some railroads have not issued lists for three or four months. Consequently, although demand is heavy, few sales are being made. Stocks in Buffalo yards are extremely low, and the great scarcity has had the effect of raising the cheaper grades of steel. No. 1 busheling has been advanced to \$30 and No. 2 busheling and bundled sheet stamped scrap to \$22 and \$24 per ton; wrought pipe to \$29 and stove plate and locomotive grate bars to \$25 per ton. A very important meeting of the American Iron and Steel Institute committee is to be held in New York this week, at which it is expected that recommendation will be made to establish a fixed Government price on each commodity on the list. The theory advanced that the price for the principal scrap commodities being fixed by the Government would automatically regulate the price for other grades, appears to have been erroneous, as the tendency rather has been to bring the unregulated grades of scrap up more nearly to the maximum fixed price established. Dealers think the best solution of the matter will now be to fix a price on each grade and it is hoped this will be done. Some confusion in price schedule has been caused by the price announced by the Government of \$35 on wrought scrap—and including No. 1 busheling—which would permit of the latter commodity being sold at this figure; and this is found to be not in conformity with the fixed price for heavy melting steel, which is ordinarily higher in price than No. 1 busheling. We quote dealers' asking prices, per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel	\$30.00
Low phosphorus	40.00
No. 1 railroad wrought	35.00
No. 1 railroad and machinery cast	30.00
Iron axles	\$45.00 to 47.00
Steel axles	45.00 to 47.50
Carwheels	30.00
Railroad malleable	30.00
Machine shop turnings	18.00 to 18.50
Heavy axle turnings	26.00 to 27.00
Clean cast borings	19.00 to 20.00
Iron rails	37.00 to 38.00
Locomotive grate bars	25.00
Stove plate	25.00
Wrought pipe	29.00
No. 1 busheling scrap	30.00
No. 2 busheling scrap	22.00 to 24.00
Bundled sheet stamping scrap	22.00 to 24.00

Philadelphia

PHILADELPHIA, Jan. 22.

So far as the steel mills and blast furnaces of this district are concerned, the five-day closing period ordered by the Fuel Administration has been of no effect in relieving the critical situation as to fuel supply and railroad congestion. Nothing short of complete paralysis of industry could be worse than the conditions prevailing this week, which will undoubtedly be made even more acute by the heavy snow storm throughout the East to-day. Although nearly all of the nearby steel plants were exempted from complying with the closing order, they were not able to run without coal, and in several instances their shut-down could not have been more complete if they had complied to the letter with the Fuel Administration instructions. The Midvale Steel & Ordnance Co. closed its Coatesville and Wilmington plants for two or three days. The Alan Wood, Iron & Steel Co. kept a part of its open-hearth furnaces in operation, but closed its finishing mills on Monday

and Tuesday because of lack of gas coal. It was able to run the latter part of last week on fuel oil. The Lukens Steel Co. was almost completely shut down Monday, only a part of its open-hearth capacity remaining in operation. The Bethlehem Steel Co. is short of coke and its blast furnace operations are being considerably hampered by enforced banking. Similar conditions affect nearly all of the other steel mills. Blast furnaces are limping along on a partial supply of coke. Many are banked. One Warwick furnace has been out of blast since December and the other may be forced out this week. A Northern furnace is also in danger of banking at any time. The Alan Wood, Iron & Steel Co. has had one furnace banked for two weeks or more and may be obliged to bank the other this week. The completeness of the breakdown and its paralyzing results are bringing a steadily increasing measure of impatience in the iron and steel trade.

Pig Iron.—One seller of pig iron in this market has decided to take orders for second half delivery despite the Government pronouncement that all contracts for delivery after March 31 must be revised to the Government price, which is in effect at time of delivery. This seller in the past week has taken several orders, aggregating 10,000 tons, the largest single order being for 1500 tons. This selling policy is dictated by the fact that the furnaces the company represents have made contracts for iron ore, coke and other raw materials for the last half of the year, and must therefore keep their plants in operation. It was decided that under these conditions it would be better to sell now and select the most desirable orders. Therefore, this company will continue to sell on a conservative basis until the major part of the probable make for the last half is disposed of. With this one exception, all furnace representatives decline to commit themselves at the present time beyond March 31. A sale of 3500 tons of low phosphorus iron was made last week. The Penn Seaboard Steel Corporation succeeded in placing a part of its 16,500-ton inquiry for basic with a Chester, Pa., furnace, but is having difficulty finding other furnaces to accept a share of the business. Another inquiry has been issued by this company for 12,000 tons of basic, also for second quarter. Stanley G. Flagg & Co. are inquiring for 2500 tons of malleable, 750 tons of basic, and 300 tons of foundry (3 to 3.25 per cent silicon) for delivery in February, March and April. General inquiry has been falling off, due no doubt to the discovery by buyers that it is difficult to obtain offers of iron. Many small foundries are clamoring for deliveries on contracts, stating that they will be forced to close unless they obtain supplies soon. We quote the following standard grades of iron at furnace, with the exception of Virginia iron, for which the delivered price in the Philadelphia district is quoted:

Eastern Pennsylvania No. 1 X	\$34.50
Eastern Pennsylvania No. 2 X	33.50
Eastern Pennsylvania No. 2 foundry	33.00
Virginia No. 2 X (including freight)	36.77
Virginia No. 2 foundry (including freight)	36.27
Basic	33.00
Gray forge	32.00
Bessemer	36.30
Standard low phosphorus	53.00
Low phosphorus (copper bearing)	50.00

Coke.—Probably nothing more will be heard officially of the proposal of the Fuel Administration to divert 100,000 tons of coke from Eastern blast furnaces to the Bethlehem Steel Co. and the Midvale Steel & Ordnance Co., thus shutting down eight or ten Eastern furnaces. The visit of the committee of the Eastern Pig Iron Association to Washington, as mentioned in this report last week, was fruitful in sidetracking this contemplated action. It developed at the hearing that the Fuel Administration had considered only the aspect presented by the steel companies. The merchant furnace men presented their own side of the case. The complaint of the Bethlehem Steel Co., it appears, was that it would run short of pig iron unless it was furnished with coke. This complaint the merchant furnace man answered by stating that the Bethlehem Steel Co. has been selling iron from its own furnaces and also that it has been selling coke to foundries in eastern Pennsylvania. The furnace men suggested that they be permitted to continue operations

and, if it were necessary, their output of iron could be commandeered for the benefit of the Bethlehem company. The case of the Midvale Steel & Ordnance Co. was somewhat different. It was stated that this company had been asked several months ago to contract for its coke requirements for first quarter, but declined to do so, maintaining that, as it was on important war work, the Government would commandeer the coke it needed when asked to do so. With coke companies unable to ship all of the coke they have contracted to ship, it will be impossible for the Midvale company to obtain a full supply unless the Fuel Administration comes to its rescue. This the merchant furnace men suggested could be done by resorting to extraordinary measures on the railroads. A phase of the controversy which is said to have appealed to the fuel officials was the statement that the closing down of merchant blast furnaces would probably interfere seriously with the operations of non-integrated mills, which are supplying plates, shapes and other material for ships, munition plants, etc. At the conclusion of the hearing, the officials of the Fuel Administration agreed to the suggestion that the whole question be submitted to the American Iron and Steel Institute. It is expected that the latter organization will find a solution that will not work a severe hardship upon any one interest.

Ferroalloys.—Ferromanganese is unchanged at \$250 for the 80 per cent. There is very little inquiry. Spiegel-eisen is quoted at \$60, furnace, and sales are also light.

Billets.—There have been no sales of billets in this market aside from the Government order reported a week ago. We quote 4 x 4 in. billets at \$50.50, Philadelphia.

Sheets.—A fair business is being done in sheets for first quarter both for the Government and for ordinary commercial business. An eastern Pennsylvania mill is making contracts with the stipulation that any unfilled tonnage on April 1 may be cancelled by either party. Government business, of course, is accepted without any such clause, the price being subject to revision on tonnage delivered after April 1. We quote No. 10 blue annealed sheets at 4.25c., Pittsburgh; No. 28 black at 5c., and No. 28 galvanized at 6.25c.

Structural Material.—Requirements of the United States Government for ordnance bases, of which three are to be built on the Atlantic seaboard, figure up a considerable tonnage. Bids will be opened on Thursday in Washington for the construction of buildings. Aside from Government work there is very little business. Reports of widespread cancellation of contracts for shapes cannot be substantiated. In two or three instances, fabricators who are now fully engaged on Government work and who get all the steel they require on priority order, have asked to have contracts cancelled, but upon the refusal of the mills to consider this, they have consented to a postponement of deliveries. In one case cited wherein a fabricator had a long-term contract with a mill, it was the custom of the mill to cancel any unfilled tonnage at the end of each month. Latterly the specifications of the fabricator dropped off materially, almost to nothing, and then the mill declined to follow its practice of cancelling unfilled tonnage at the end of the month and asked the fabricator to take out the amount contracted for. This the fabricator has declined to do, and the matter remains on that basis. We quote plain material at 3c., Pittsburgh.

Plates.—Production of plates in the eastern Pennsylvania mills will make a sorry showing in January and the Emergency Fleet Corporation is apt to suffer delays in the shipment of plates to shipyards unless there is some relief soon for shortage of gas coal, congestion of railroad transportation and other ills. Orders for non-Government work are being booked by Eastern mills, but sellers are careful to stipulate that deliveries are dependent on the ability of the mills to operate and produce the tonnage. A clause in the contracts made by one company provides that any unfilled tonnage on April 1 from first quarter contracts may be cancelled at the will of either party. The Government this week awarded orders to several shops for 4500 freight cars of various types for shipment to the American railroad be-

ing built in France. The new plate mill of the Penn Seaboard Steel Corporation at New Castle, Del., will be ready for operation in about three months. We quote plates at 3.25c., Pittsburgh.

Iron and Steel Bars.—Makers of bar iron are finding it very difficult to operate. Several mills have been shut down, not only because of the five-day closing order of the Fuel Administration, but because they have not had coal with which to run. Makers of steel bars who have contracts to furnish shell bars to the Government will find it difficult, under present conditions, to make the deliveries which the Government requires. In one instance, a mill has made plans to utilize its shape and rail rolling capacity for shell bars to make up for the time lost from enforced shutdowns. We quote bar iron at 3.50c., f.o.b. mill or Pittsburgh base, according to destination, and soft steel bars at 2.90c., base, Pittsburgh.

Old Material.—It is exceedingly difficult these days for the dealer in iron and steel scrap to do business. Cold and stormy weather, which makes loading and unloading of scrap almost impossible; shortage of cars, railroad embargoes and the fixed selling prices are the factors which make it hard to sell or buy. Commissions of 3½ per cent are now being freely paid by the mills. Brokers find that the producer of scrap or the small dealer exacts the full Government price, and the broker is forced to charge the commission or make no profit at all. No. 1 busheling is about the only item which has not sold at the full fixed price. A sale was made last week at \$28, delivered, although the fixed maximum price is \$35. The market for heavy melting steel is very firm and mills would undoubtedly buy freely if the material were to be had. We quote the following prices for delivery in the eastern Pennsylvania district:

No. 1 heavy melting steel	\$30.00
Steel rails, rerolling	35.00
Low phosphorus heavy melting	\$38.00 to 40.00
Low phosphorus (not guaranteed)	33.00 to 35.00
Old iron rails	40.00 to 42.00
Old carwheels	30.00
No. 1 railroad wrought	35.00
No. 1 yard wrought	33.00 to 35.00
No. 1 forge fire	26.50 to 27.50
Bundled sheets	26.50 to 27.50
No. 2 busheling	17.00 to 18.00
Turnings (for blast furnace use)	17.50 to 18.00
Machine shop turnings (for rolling mill use)	19.00 to 19.50
Cast borings (for blast furnace use)	17.00 to 17.50
Cast borings (clean)	20.00
No. 1 cast	30.00
Grate bars	22.50 to 23.00
Stove plate	22.50 to 23.00
Railroad malleable	30.00
Wrought iron and soft steel pipes and tubes (new specifications)	32.50

British Steel Market

Foundry Pig Iron Stocks Larger—Price of Ferromanganese to Be Raised

(By Cable)

LONDON, ENGLAND, Jan. 23.

Stocks of foundry pig iron are increasing owing to car shortages, but the output is being checked by the increased production of basic iron. Semi-finished steel is nominal. Warehouse parcels of wire rods are commanding fancy prices. Tin plates are quoted at 31s. 6d. basis. Ferromanganese is firm and the domestic price will probably be advanced. We quote as follows:

Tin plates coke, 14 x 20; 112 sheets, 108 lb., f.o.b. Wales, 31s. 6d.
Ferromanganese \$250 c.i.f. for export to America.
Ferrosilicon, 50 per cent, c.i.f. £35 upward.
On other products control prices are as quoted in THE IRON AGE of July 19, 1917, p. 171.

Slump in Tin Affects Tin-Plate Market—No Pig-Iron Readjustment Yet

(By Mail)

London, England, Jan. 1, 1918.—Developments have been kept in abeyance in the past fortnight, due to the holiday period. Pig iron still remains unsettled, especially as to the overdue general adjustment of producers' terms due to the increased costs of fuel. The protracted negotiations in respect to a settlement of

this question have so far led to no tangible results, and this is seriously restricting business, especially in the Midlands, where producers confine their new bookings to regular customers from whom they should have no difficulty in obtaining additional necessary charges.

There is no doubt that allowances will be made to smelters against the enhanced cost of coke and coal, and that it will be made retrospective from the date on which fuel was put up. Meantime Midland producers have very little room left for additional orders for the first two months of the year. Buyers seem anxious as to future deliveries in view of the recent growing stringency and the tension is becoming more acute. The deliveries of common Cleveland iron were better during last month, although the supply of cars still leaves much to be desired. Applications from consumers for January were very heavy and it is hoped that more iron will move into consumers' hands shortly. Hematite is tight but fair qualities have been delivered to cover urgent needs. General export business is slow while shipments have decreased. The stringency in hematite is being remedied by the steady increase in the output of basic iron.

Semi-finished steel is unchanged. It is absolutely dominated by the large allocations for munitions and shipbuilding requirements. The official quotation of Welsh bars and billets remains at £10 7s. 6d. net f.o.t. Business in American material appears to be completely at a standstill, and the market is nominal with no offers reported lately. Certain merchants who used to do a regular business are not quoting, for the negotiation of orders is virtually impossible under present difficulties.

Business in finished iron and steel has been further restricted over the year-end. There has been an incessant demand, but there is not much prospect of buyers' needs being met at present, most works being mere onlookers, while considerable repairs have had to be carried on over the holidays, for plants have been strained to their utmost capacity while labor conditions have become more difficult. Outside of munitions and shipbuilding work, operations are extremely limited and merchant business has almost vanished. Even where applications are made, backed up by primary certificates, the arranging of new orders is often delayed through lack of sellers. The tendency all round is strong, although the maximum rates remain unaltered, pending an adjustment. Business in scrap material hangs fire on account of the dearth of offers. There are plenty of inquiries both for iron and steel scrap.

The position of ferromanganese has remained absolutely stationary and the tone is fairly firm. A fair business has been done again lately for neutral and Allied continental ports at about £60 f.o.b. for loose for forward shipment, but buyers for North American Atlantic ports are still holding back, although the few sellers in evidence uphold their terms at about \$250 c.i.f. for January-June shipment. Indian manganese ores are quite nominal at 3s. 6d. per unit c.i.f. U.K. ports.

New York

NEW YORK, Jan. 23.

Pig Iron.—During the past few days there has been a noticeable increase in sales of pig iron for delivery over the last half of the present year at Government prices with the required proviso in regard to possible revision of quotations April 1. Nearly all of the iron sold by New York agencies will come from Buffalo and eastern Pennsylvania stacks, although a limited tonnage of Alabama iron has been sold in spite of the very high freight rate prevailing and the slow deliveries. The selling is, however, not carried on with anything like the freedom melters would like to see. The order of the Fuel Administrator had very little effect on the blast furnaces, as only a few stacks in the eastern territory have been banked on account of the order. For early delivery we quote as follows:

No. 1 X	.....	\$35.25
No. 2 X	.....	34.25
No. 2 Plain	.....	33.75
No. 2 Southern (rail and water)	.....	\$38.75 to 39.25
No. 2 Southern (all rail)	.....	39.15 to 39.65
No. 2 X Virginia	.....	37.00 to 37.25

Ferroalloys.—The market for domestic ferromanganese is extremely quiet. Inquiries are few and sales are fewer. The principal demand is for carload lots for early delivery. One inquiry, noted two weeks ago, for 1200 tons, has been withdrawn, the consumer to make it himself. An older inquiry for 1200 tons has been supplanted by another for about 800 to 1000 tons for delivery from February to June, inclusive. The quotation is firm at \$250. Spiegeleisen is also quiet. There is only one inquiry of consequence noted. It involves about 1000 tons for delivery from February to June, inclusive, and is a substitute for the 1200-ton inquiry for a Middle West consumer, reported about a month ago. The quotation for the 20-per cent grade is about \$60, furnace, for the first half. Ferrosilicon, 50 per cent, is firm at \$175 to \$185 per ton for first quarter delivery, depending on the size of the order. Some other ferroalloys are quoted in the first issue of each month in this paragraph.

Finished Iron and Steel.—The steel trade has not at this writing recovered from the stunning blow which it received on the morning of Jan. 17, when the fuel-saving order of the Fuel Administrator was promulgated. No authentic information is available as to what improvement is likely to result, the heavy snows following sharp cold weather having dislocated transportation and communication systems. It is estimated, however, considering the country as a whole, that about 70 per cent of capacity in blast furnaces, open-hearth plants and coke ovens have been in operation in the five days and with only those rolling mills operating as were turning out direct war products, while Bessemer plants were entirely down, Government steel specifications calling for open-hearth products. In structural lines interest is evinced in 500 buildings for export for the Signal Corps, U. S. A., but details are lacking. Other new work for the Government includes 600 tons at Aberdeen, Md., 200 tons at the Navy Yard, Washington, and 400 tons for a power house near Sheffield, Ala., for which bids are being taken by J. G. White & Co. The New York Municipal Railways Corporation is inquiring for 150 tons of work in Brooklyn. Contracts let embrace 2000 tons for a power house, Sheffield, Ala., awarded to the McClintic-Marshall Co.; railroad bridge work for the Lehigh Valley at Newark, 250 tons, and for the Pennsylvania, 300 tons, both awarded to the McClintic-Marshall Co.; for the Virginian, 300 tons, to the American Bridge Co., and for the Norfolk & Western, 130 tons, to a fabricator unnamed; an armory at Ninety-fifth Street, New York, 250 tons, to the Passaic Rolling Mill Co., and a boiler house, American Smelting & Refining Co., Perth Amboy, N. J., 250 tons. The 80,000 tons of rails for the Canadian Pacific are not yet settled, and one rumor is that an effort will be made to settle the business through the authorities at Washington. We quote mill shipments of steel bars at 3.095c., New York; shapes 3.195c., plates 3.445c. and bar iron 3.695c., New York. Out of store prices are 1c. higher.

Cast-Iron Pipe.—On about 1450 tons of cast-iron pipe for the city of Boston, the United States Cast Iron Pipe & Foundry Co. was the lowest bidder at the following figures: 4-in., \$54.20; 6, 10 and 12-in., \$51.20, and 16-in., \$50.70. The company also bid \$100 per ton on about 200 tons of special fittings. No other public pipe business of importance is pending, but contracting by private buyers is fairly active. Nominal prices as agreed upon by manufacturers and the Government continue as follows: \$55.35, New York, for 6-in. and heavier, and \$58.35 for 4-in.; \$65.35 for 3-in. and \$1 additional for class A and gas pipe.

Old Material.—Continuation of cold weather with heavy snow has made the movement of scrap extremely slow and has added to the troubles of the dealers who for a long time have had much difficulty in obtaining

permits to ship and are transacting business under extreme difficulties. That there is a shortage of scrap is evident. We quote prices of brokers as follows to New York producers and dealers, per gross ton, New York:

Heavy melting steel scrap for shipment to eastern Pennsylvania	\$27.80
Old steel rails (short lengths) or equivalent heavy steel scrap	26.80
Rerolling rails	32.80
Relaying rails	\$60.00 to 70.00
Iron and steel car axles	45.30
No. 1 railroad wrought	32.80
Wrought-iron track scrap	32.80
No. 1 yard wrought long	32.80
Light iron	9.00 to 10.00
Cast borings (clean)	17.80
Machine-shop turnings	17.80
Mixed borings and turnings	14.00 to 15.00
Wrought-iron pipe (1 in. minimum diameter), not under 2 ft. long	29.00 to 30.00

Dealers in New York and Brooklyn are quoting as follows to local foundries, per gross ton, but for delivery to cupola platforms of Brooklyn foundries about \$3 more is quoted:

No. 1 machinery cast	\$27.80 to \$28.50
No. 1 heavy cast (column, building materials, etc.)	23.00 to 24.00
No. 2 cast (radiators, cast boilers, etc.)	24.00 to 25.00
Stove plate	21.00 to 22.00
Locomotive grate bars	25.50 to 26.50
Malleable cast (railroad)	27.80 to 28.50
Old carwheels	27.80 to 28.50

Illegal Exporting of Scrap

WASHINGTON, Jan. 22.—Reports have recently been received by the War Trade Board indicating that considerable quantities of scrap iron and steel, for the exportation of which licenses are required, have been shipped out of the country without licenses through the use of classifications for which no license requirement is made. Although the category of iron and steel products covered by the board's export regulations has grown steadily until it is fairly comprehensive, there remain a number of important classifications upon which there are no restrictions and through their use comparatively large quantities of material listed as second-hand have been exported, and, according to the board's information, have subsequently been converted into scrap. With a view to putting an end to these operations the board has issued the following warning:

"The War Trade Board calls attention to the fact that the exportation of scrap iron or steel requires an export license and that any shipper who exports under any different classification (such as second-hand rails, car wheels, etc.), any articles manufactured of iron or steel which are exported for the purpose of being scrapped at destination, is guilty of false declaration and is subject to such penalties therefor as the law provides."

The penalties provided by the statute authorizing the licensing of exportations are very severe and include the refusal of licenses for the exportation of any material to persons guilty of false declarations.

The Society of Ohio Safety Engineers held its annual meeting at Cleveland, in the rooms of the Cleveland Engineering Society, Jan. 22. The program included papers on "The Design of Good Mechanical Safeguards," by R. C. Routsong, director of safety and welfare, National Cash Register Co., Dayton; "Plant Sanitary Equipment," by W. N. Fitch, director of safety and hygiene, B. F. Goodrich Rubber Co., Akron, and "The Legal Aspects of Safeguard in Ohio," by E. J. Russert of the Sharon Steel Hook Co., Youngstown.

The threatened strike of molders at Columbus, Ind., has been averted. Their demands were compromised at the plants of the Caldwell & Drake Iron Works and the Columbus Co-operative Foundry Co. Those at the plant of the Emerson-Brantingham Co. are at work pending a definite agreement. Hour work has been abolished at this plant and the piece system adopted, which will go into effect as soon as a price schedule is agreed on.

IRON AND INDUSTRIAL STOCKS

Trading Shows Stolidity Toward Tie-up of Industries—Sales Fall Off 50 Per Cent

NEW YORK, Jan. 23.

The comparative indifference of the stock market toward the abrupt cessation of industry caused by the fuel conservation edict of the Fuel Administrator was the outstanding feature of the past week. The total transactions, however, fell off from 4,851,094 sales the previous week to 2,673,333. Steel stocks showed no variation from the general trend. United States Steel, com., fell off 1% points; Bethlehem Steel, Class B, 3%; Midvale Steel, com., 1%. Some slight advances were recorded: Colorado Fuel & Iron, com., 5% point; Crucible Steel, com., 2%; pref., 1%; Lackawanna Steel, com., 2%; Republic Iron & Steel, com., 1%; pref., 1%; United States Steel, pref., 1%.

The range of prices on active iron and industrial stocks from Tuesday of last week to Wednesday of this week was as follows:

Allis-Chalm. com. 18 1/4- 19	Int. Har. Corp. com.
Allis-Chalm. pf. 73	Lacka. Steel. 75 1/2- 77
Am. Can. com. 35- 37 1/2	Lake Sup. Corp. 12 1/2- 13 1/2
Am. Can. pf. 89 1/2- 90	Midvale Steel. 43 3/4- 46 1/4
Am. Car & Fdry. com. 69 1/2- 72 1/2	Nat.-Acme. 28 1/4- 29 1/4
Am. Loco. com. 54- 56 1/2	Nat. En. & Stm. com. 40- 43 1/2
Am. Radi. com. 250	N. Y. Air Brake. 120- 121
Am. Ship com. 87	Nova Scotia Steel. 65- 65 1/2
Am. Steel Fdries. 60- 61	Pitts. Steel pf. 90 3/4- 91
Bald. Loco. com. 57 1/2- 61 1/4	Bald. Loco. pf. 98
Colo. Fuel. 35 1/2- 36	Beth. Steel com. 74 1/4- 76 1/2
Cruc. Steel com. 53 1/2- 57 1/2	Beth. Stl. Cl. B. 73 1/2- 76 1/2
Cruc. Steel pf. 88 1/2- 89	Cambria Steel. 125- 125 1/4
Gen. Electric. 128 1/4- 131 1/4	Case (J. I.) pf. 77- 78
Gt. No. Ore Cert. 25 1/2- 27 1/2	Cent. Fdry. pf. 44- 45
Gulf States Steel. 87- 88	Chic. Pneu. Tool. 48- 49 1/4
Int. Har. of N. J. com. 116- 119 1/2	Colo. Fuel. 35 1/2- 36
Int. Har. of N. J. pf. 108	Cruc. Steel com. 53 1/2- 57 1/2

Dividends

The T. H. Symington Co., quarterly, 2 per cent on the preferred and extra 2 per cent on account of accumulated dividends, payable Feb. 15.

The Taylor-Wharton Iron & Steel Co., quarterly, 1% per cent on the preferred, payable Feb. 1.

The Willys-Overland Co., quarterly, 25c. on the common, payable Feb. 1.

Decreased Earnings of Republic

Report of the Republic Iron & Steel Co. for the quarter ended Dec. 31, 1917, compares as follows:

Quarters ended:

	Dec. 31, '17	Sep. 30, '17	Jun. 30, '17	Mar. 31, '17
Net earn....	\$5,398,694	\$8,697,464	\$8,778,343	\$5,836,181
Other inc....	170,491	88,304	60,554	41,675
Total inc....	\$5,569,185	\$8,785,768	\$8,838,897	\$5,877,856
Deprec., etc....	1,034,095	604,159	331,499	304,078
Bond inter....	178,493	181,644	193,935	205,253
*Taxes	1,299,847	\$6,431,960	1,183,056	1,021,598
*Bal. fr' divs....	\$3,056,749	\$5,1568,005	\$7,130,407	\$4,346,927
*Pfd. divs....	437,500	437,500	437,500	437,500
*Com. divs....	407,865	407,865	407,865	407,865
Surplus	\$2,211,384	\$722,639	\$6,285,042	\$3,501,561

*Excess profits taxes, etc.

†Includes additional taxes for previous six months.

§The balance for dividends for the quarter ended Sept. 30, calculated on previous basis of accounting, would have been \$6,882,425.

Allowing for dividends on the preferred stock, the balance available for the \$27,191,000 common stock was equal to \$9.63 a share.

The above results are subject to change incident to excess profits and income tax rulings and to adjustment at the end of the year when accounts are finally audited.

The company reports that finished and semi-finished unfilled orders on hand Dec. 31, 1917, amounted to 418,943 tons, against 492,048 tons on Sept. 30, 1917.

On the basis of its quarterly reports, Republic Iron & Steel Co.'s net profits available for dividends amounted to \$16,102,087 in 1917, against \$14,789,163 in

1916, an increase of \$1,312,924. This is after deducting over \$9,000,000 for excess profits taxes and other contingencies. The balance applicable to the \$27,191,000 common stock, after dividends on the preferred stock, was equal to \$52.78 a share, compared with \$47.95 a share in 1916. Net earnings in 1917 were \$28,710,683 after deducting charges for maintenance and repairs of plants, against \$16,544,636 the year before. Income derived from interest and dividends totaled \$361,025, bringing total net earnings up to \$29,071,708 before deductions for depreciation and renewal of plants, bond interest and provision for excess profits taxes.

In 1917 the company paid the full 7 per cent dividend requirement on the preferred stock, which amounted to \$1,750,000, and also distributed to common stockholders dividends of \$1,631,460, or 6 per cent, compared with but \$407,865 the year before. In 1916 preferred stockholders received back dividends totaling \$2,750,000, which wiped out all preferred dividends which were in arrears.

Industrial Finances

The Westinghouse Electric & Mfg. Co. has sold \$15,000,000 of 6 per cent one year notes. The company has advised the Federal Reserve Board of its intention to issue these notes, and the board has stated that it has no objection. It is stated that the purpose is to secure for a fixed period, working capital temporarily required to carry the large inventories which it is essential that the company should have under present conditions.

Mention was made in a recent issue of the declaration by the Pittsburgh Steel Co. of a special dividend of 20 per cent on the common stock. About a year ago this company declared a similar dividend, and has paid also in the last two years, a regular quarterly dividend of 2 per cent on the common stock, so that it has paid in two years no less than 56 per cent in dividends on its common stock.

The Standard Car Construction Co., Columbia Bank Building, Pittsburgh, has increased its capital from \$1,000,000 to \$2,000,000, and plans to make large additions to its plant located at Sharon, Pa.

The Bostwick Steel Lath Co. of Niles, Ohio, has increased its capital stock from \$100,000 to \$400,000. The company plans to largely increase its output, and will enlarge its main building, and also install some new equipment.

Crocker Brothers, Forty-second Street Building, New York, have filed notice of the formation of a limited partnership, from Jan. 1, 1918, to Jan. 1, 1919. D. Fairfax Bush, Brookville, N. Y.; William Dette, Rye, N. Y.; Albert L. Nash, Montclair, N. J., and George A. Crocker, Jr., Oyster Bay, N. Y., are general partners in the company, and Leah R. Crocker, Mount Kisco, N. Y., special partner, the latter having contributed \$300,000 to the common stock of the partnership. The company engages in a general commission business in pig iron and other metals.

The Wharton Steel Co., Wharton, N. J., of which J. Leonard Replogle is the principal owner, has consolidated its floating debt and a mortgage of \$750,000 through an issue of \$1,200,000 of two-year 6 per cent notes. About \$200,000 of the notes was offered to the public at 94. The remainder was placed among officers and employees of the company.

On Jan. 5 last, the Youngstown Sheet & Tube Co., Youngstown, Ohio, subscribed for \$8,000,000 of Government certificates. The company decided to issue a stock dividend of 100 per cent, but the decision was reversed later, presumably because of the belief that such a stock dividend might be subject to taxation as income. The recent Supreme Court decision in the Yale & Towne case would seem to indicate that at least a considerable part of this proposed stock dividend would not be subject to the income tax. It is believed, therefore, that the company on the occasion of its annual meeting in Youngstown on Feb. 2 next may again declare this stock dividend of 100 per cent and possibly for a larger amount, but nothing official on this has been given out by the company and will not be until definite action is taken.

The Bethlehem Shipbuilding Co., Bethlehem, Pa., a subsidiary of the Bethlehem Steel Co., has secured a loan of \$5,700,000 from the United States Shipping Board for the construction of housing facilities for employees.

Following the filing of an equity suit by the Cleveland Automatic Machine Co., Cleveland, the Bijur Motor Lighting Co., 87 West End Avenue, New York, with works at Hoboken, N. J., for the manufacture of motor lighting and starting apparatus, has been placed under a receivership. The company has a capital stock of \$1,625,000, with assets said to be about \$2,000,000; existing liabilities are \$1,225,000. Joseph Bijur, E. Bright Wilson and Louis V. Hubbard have been appointed receivers.

The Brier Hill Steel Co., Youngstown, Ohio, has declared preferred and common dividends for the current year, payable April 1, July 1, Oct. 1 and Jan. 1 to stock of record on the twentieth of the preceding month. The annual preferred dividend is 7 per cent, or 1 1/4 per cent quarterly, and the common 6 per cent, or 1 1/2 per cent quarterly. Such additional dividends on the common stock as may be paid will be declared later. After the meeting of the board of directors, it was stated that no recommendation was made for a stock dividend to be acted on at the annual meeting of the company held on Tuesday, this week.

At the monthly meeting of directors of the Crucible Steel Co. of America, held in Pittsburgh last week, no action was taken in the matter of declaring a dividend on the common stock. It was the opinion of the directors that it would be unwise to declare a dividend on the common stock at this time, owing to the uncertainties ahead of the steel business.

Embargo Ordered by Director-General McAdoo

WASHINGTON, Jan. 23.—(By Wire).—Director-General McAdoo has issued an order placing an embargo until further notice upon all freight, except food, fuel and war materials, on the Pennsylvania Railroad East of Pittsburgh, the Baltimore & Ohio Railroad East of the Ohio River and all the lines of the Philadelphia & Reading Railroad.

This order is the result of a recommendation made last night by Fuel Administrator Garfield, who fears that the rush of freight following the industrial shutdown will swamp the Eastern railroads, especially in view of the unfavorable weather conditions now prevailing. Mr. McAdoo refused last night to issue the embargo, but upon further representations on the part of Dr. Garfield, the order in a modified form has been signed. As it provides for an indefinite period, it may be revoked without notice.

Marting Iron & Steel Co. Officers

The annual stockholders' meeting of the Marting Iron & Steel Co., Ironton, Ohio, was held Jan. 9. The following officers were re-elected: President, Col. H. A. Marting; vice-president, general manager and treasurer, E. O. Marting; secretary, W. W. Marting, and general superintendent, C. B. Fowler. The officers named, together with the following, constitute the board of directors: Dr. A. C. Lowry, A. H. Mittendorf, D. C. Davies, F. L. McCauley, Ironton; F. L. Marting, Portsmouth, and James A. Green, Cincinnati.

The report for 1917 showed that it was a very satisfactory one in spite of the many price changes and short coke supply during the last half of the year.

The Orton-Steinbrenner Co., Huntington, Ind., manufacturer of locomotive cranes and steam shovels, has declared a bonus for its employees averaging 155 per cent of their last year's wages. Seventy-five per cent is payable now and the remainder before July 1. The first payment requires more than \$200,000. The company has Government and Allied contracts that will require an extensive enlargement of its plant.

Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight rates from Pittsburgh on iron and steel articles, aside from wrought iron and steel pipe in carloads, per 100 lb., New York, 19.5c.; Philadelphia, 18.5c.; Boston, 21.5c.; Buffalo, 11.6c.; Cleveland, 13.5c.; Cincinnati, 18.5c.; Indianapolis, 20c.; Chicago, 21.5c.; St. Louis, 27c.; Kansas City, 47c.; minimum carload, 36,000 lb.; St. Paul, 40c.; minimum carload, 36,000 lb.; Denver, 79c.; minimum carload, 36,000 lb.; Omaha, 47c.; minimum carload, 36,000 lb.; New Orleans, 30.7c.; Birmingham, 43c.; Pacific Coast, 75c.; minimum carload, 80,000 lb. To the Pacific Coast the rate on steel bars and structural steel is 90c., minimum carload, 40,000 lb.; and 85c., minimum carload, 50,000 lb. On wrought iron and steel pipe the rate from Pittsburgh to Kansas City is 40c. per 100 lb., minimum carload 46,000 lb.; to Omaha, 40c., minimum carload 46,000 lb.; to St. Paul, 35.5c., minimum carload 46,000 lb.; Denver, 79c., minimum carload 46,000 lb. A 3 per cent transportation tax now applies.

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in. on one or both legs, $\frac{1}{4}$ in. thick and over, and zees, structural sizes, 3c.

Wire Products

Wire nails, \$3.50 base per keg; galvanized, 1 in. and longer, including large-head barb roofing nails taking an advance over this price of \$2, and shorter than 1 in., \$2.50. Bright basic wire, \$3.35 per 100 lb.; annealed fence wire, Nos. 6 to 9, \$3.25; galvanized wire, \$3.95; galvanized barb wire and fence staples, \$4.35; painted barb wire, \$3.65; polished fence staples, \$3.65; cement-coated nails, \$3.40 base; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 47 per cent off list for carload lots, 46 per cent for 1000-rod lots, and 45 per cent off for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large rivets, \$4.65 base
 $\frac{7}{16}$ in. x 6 in. smaller and shorter rivets, 45-10 per cent off list
 Machine bolts h.p. nuts, $\frac{3}{8}$ in. x 4 in.:
 Smaller and shorter, rolled threads, 50-10-5 per cent off list
 Cut threads, 50-5 per cent off list
 Larger and longer sizes, 40-10 per cent off list
 Machine bolts c.p.c. and t. nuts, $\frac{3}{8}$ in. x 4 in.:
 Smaller and shorter, 40-10 per cent off list
 Larger and longer, 35-5 per cent off list
 Carriage bolts, $\frac{3}{8}$ in. x 5 in.:
 Smaller and shorter, rolled threads, 50-5 per cent off list
 Cut threads, 40-10 per cent off list
 Larger and longer sizes, 40 per cent off list
 Lag bolts, 50-10 per cent off list
 Plow bolts, Nos. 1, 2, 3, 50 per cent off list
 Hot pressed nuts, sq., blank, 2.50c. per lb. off list
 Hot pressed nuts, hex., blank, 2.30c. per lb. off list
 Hot pressed nuts, sq., tapped, 2.30c. per lb. off list
 Hot pressed nuts, hex., tapped, 2.10c. per lb. off list
 C.p.c. and t. sq. and hex. nuts, blank, 2.25c. per lb. off list
 C.p.c. and t. sq. and hex. nuts, tapped, 2.00c. per lb. off list
 Semi-finished hex. nuts, $\frac{3}{8}$ in. and larger, 60-10-10 per cent off list
 $\frac{9}{16}$ in. and smaller, 70-5 per cent off list
 Stove bolts, 12 $\frac{1}{2}$ per cent extra for bulk
 Stove bolts, 50-10-5 per cent off list
 Tire bolts

The above discounts are from present lists now in effect. All prices carry standard extras.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, \$57; chain rods, \$65; screw, rivet and bolt rods and other rods of that character, \$65. Prices on high carbon rods are irregular. They range from \$70 to \$80, depending on carbons.

Railroad Spikes and Track Bolts

Railroad spikes, 9/16 in. x 4 $\frac{1}{2}$ in. and heavier, per 100 lb., \$3.90, in lots of 200 kegs of 200 lb. each, or more; track bolts, \$4.90. Boat spikes, \$5.25 per 100 lb., f.o.b. Pittsburgh.

Terne Plate

Effective Nov. 7 prices on all sizes of terne plates are as follows: 8-lb. coating, 200 lb., \$15 per package; 8-lb. coating, I. C., \$15.30; 12-lb. coating, I. C., \$16.75; 15-lb. coating, I. C., \$17.75; 20-lb. coating, I. C., \$19; 25-lb. coating, I. C., \$20; 30-lb. coating, I. C., \$21; 35-lb. coating, I. C., \$22; 40-lb. coating, I. C., \$23 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars at 2.90c. from mill, and 4.50c. to 5c. from warehouse in small lots for prompt shipment. Refined iron bars, 1.50c. in carload and larger lots, f.o.b. mill.

Wrought Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card, as announced Nov. 5 by the Government on steel pipe, those on iron pipe being the same as quoted for some time:

Butt Weld			Iron		
Inches	Steel	Black Galv.	Inches	Black	Galv.
$\frac{1}{2}$, $\frac{1}{4}$ and $\frac{3}{8}$	44	17 $\frac{1}{2}$	$\frac{1}{8}$ and $\frac{1}{4}$	23	+4
$\frac{1}{2}$	48	33 $\frac{1}{2}$	$\frac{3}{8}$	24	+3
$\frac{3}{4}$ to 3	51	37 $\frac{1}{2}$	$\frac{1}{2}$	28	10
			$\frac{3}{4}$ to 1 $\frac{1}{2}$	33	17

Lap Weld		
2 $\frac{1}{2}$	44	31 $\frac{1}{2}$
2 $\frac{1}{2}$ to 6	47	34 $\frac{1}{2}$
7 to 12	44	30 $\frac{1}{2}$
13 and 14	34 $\frac{1}{2}$	2 $\frac{1}{2}$ to 6
15	32	7 to 12

Butt Weld, extra strong, plain ends		
1 $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{3}{8}$	40	22 $\frac{1}{2}$
$\frac{1}{2}$	45	32 $\frac{1}{2}$
$\frac{3}{4}$ to 1 $\frac{1}{2}$	49	36 $\frac{1}{2}$
2 to 3	50	37 $\frac{1}{2}$

Lap Weld, extra strong, plain ends		
2	42	30 $\frac{1}{2}$
2 $\frac{1}{2}$ to 4	45	33 $\frac{1}{2}$
4 $\frac{1}{2}$ to 6	44	32 $\frac{1}{2}$
7 to 8	40	26 $\frac{1}{2}$
9 to 12	35	21 $\frac{1}{2}$
		7 to 8
		9 to 12

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent. Prices for less than carloads are four (4) points lower basing (higher price) than the above discounts on black and 5 $\frac{1}{2}$ points on galvanized.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers are seven (7) points lower (higher price) than carload lots, and on butt and lap weld galvanized iron pipe are nine (9) points lower (higher price).

Boiler Tubes

The following are the prices for carload lots, f.o.b. Pittsburgh, announced Nov. 13, as agreed upon by manufacturers and the Government:

Lap Welded Steel		Charcoal Iron	
3 $\frac{1}{2}$ to 4 $\frac{1}{2}$ in.	34	31 $\frac{1}{2}$ to 4 $\frac{1}{2}$ in.	12 $\frac{1}{2}$
2 $\frac{1}{2}$ to 3 $\frac{1}{4}$ in.	24	3 to 3 $\frac{1}{4}$ in.	+ 5
2 $\frac{1}{2}$ in.	17 $\frac{1}{2}$	2 $\frac{1}{2}$ to 2 $\frac{3}{4}$ in.	7 $\frac{1}{2}$
1 $\frac{3}{4}$ to 2 in.	13	2 to 2 $\frac{1}{4}$ in.	+ 22 $\frac{1}{2}$
		1 $\frac{3}{4}$ to 1 $\frac{1}{2}$ in.	+ 35

Standard Commercial Seamless—Cold Drawn or Hot Rolled	
Per Net Ton	Per Net Ton
1 in.	\$340
1 $\frac{1}{4}$ in.	280
1 $\frac{3}{8}$ in.	270
1 $\frac{1}{2}$ in.	220
	4 $\frac{1}{2}$ to 5 in.

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department, which will be subject to special negotiation.

Sheets

Makers' price for mill shipments on sheets of United States standard gage in carload and larger lots, are as follows, 30 days net or 2 per cent discount in 10 days:

Blue Annealed—Bessemer	Cents per lb.
No. 8 and heavier	4.20
Nos. 9 and 10	4.25
Nos. 11 and 12	4.30
Nos. 13 and 14	4.35
Nos. 15 and 16	4.45

Box Annealed, One Pass Cold Rolled—Bessemer	
Nos. 17 to 21	4.80
Nos. 22 and 24	4.85
Nos. 25 and 26	4.90
No. 27	4.95
No. 28	5.00
No. 29	5.10
No. 30	5.20

Galvanized Black Sheet Gage—Bessemer	
Nos. 10 and 11	5.25
Nos. 12 and 14	5.35
Nos. 15 and 16	5.50
Nos. 17 to 21	5.65
Nos. 22 and 24	5.80
Nos. 25 and 26	5.95
No. 27	6.10
No. 28	6.25
No. 29	6.50
No. 30	6.75

Tin-Mill Black Plate—Bessemer	
Nos. 15 and 16	4.80
Nos. 17 to 21	4.85
Nos. 22 to 24	4.90
Nos. 25 and 27	4.95
No. 28	5.00
No. 29	5.05
No. 30	5.05
Nos. 30 $\frac{1}{2}$ and 31	5.10

Metal Markets

The Week's Prices

Copper, Electro-	Cents Per Pound for Early Delivery						
	New York	Tin	Lead	Spelter	New York	St. Louis	
	New	New	St.	New	St.	St.	
Jan. 16	23.50	23.50	86.00*	7.00	6.85	7.87 1/2	7.62 1/2
17	23.50	23.50	86.00*	7.00	6.85	7.87 1/2	7.62 1/2
18	23.50	23.50	86.00*	7.00	6.85	7.87 1/2	7.62 1/2
19	23.50	23.50	86.00*	7.00	6.85	7.87 1/2	7.62 1/2
21	23.50	23.50	86.00*	7.00	6.85	7.87 1/2	7.62 1/2
22	23.50	23.50	86.00*	7.00	6.85	7.87 1/2	7.62 1/2

*Nominal.

NEW YORK, Jan. 23.

Inactivity pervades all the markets. The price of copper will remain unchanged for four months to come. The spot tin scarcity continues with no relief in sight and with prices nominal. Lead is firm, inactive and nominal. Spelter is dull and unchanged. Antimony is lifeless.

New York

Copper.—The official announcement regarding copper prices, referred to as probable last week, came from the President late yesterday. According to this, the price of 23.50c., fixed on Sept. 21, 1917, is extended until June 1, on recommendation of the War Industries Board. The following conditions were laid down: That wages be not reduced, that producers sell to the Allies and the public copper at the Government price, that necessary measures be taken under the direction of the War Industries Board to prevent copper from falling into the hands of speculators, and that producers do their utmost to keep production at the maximum. The market is quiet with apparently plenty of copper to meet all needs, those outside of Government necessities, directly or indirectly, being of little consequence. The London market is still at the same level maintained for many months, or £125 per ton for spot electrolytic and £121 for futures.

Tin.—The situation remains unchanged. Permits for shipments from England are still held up in the main. Some off-grade tin is allowed to come, for which there is a good demand from small consumers who are especially hard hit by the present conditions. Offers of shipments from the East are not plentiful. The order for fuel conservation temporarily upset the market, consumers abandoning inquiry and purchasing to await the results. The effect of the order was inconsequential. In general, however, buyers of tin are cautious and it is the belief that there will be no relief for small consumers before July. Arrivals to date have been 965 tons, with 5300 reported afloat. The London market is again higher, with spot Straits quoted yesterday at £302 per ton, against £299 10s. a week ago.

Lead.—The market has come to a dead stop and there are no new developments. Very little metal is being offered for sale. Some producers cannot make offers because they have not got the metal, while others say that there is no use, for it cannot be delivered. Consumers, most of them, have quantities of lead on the way and contend that there is no need to purchase more because it cannot be shipped. The transportation problem has tied up the entire market, which, however, is quiet but firm at the nominal quotation of 7c., New York, or 6.85c., St. Louis, with the leading producer asking 6.75c., New York. Some predictions are made of an 8c. price in New York before many weeks.

Spelter.—A fair inquiry for prime Western is reported, but demand is not normal. Frequent sales are being made at 7.62 1/2c. to 7.75c., St. Louis, or 7.87 1/2c. to 8c., New York, for early delivery, which we quote as the market for prime Western with slight premiums for more advanced positions. Very little interest is exhibited beyond March delivery. A meeting was held in Washington last week between the Zinc Committee and the War Industries Board, at which a fixed price

for Grade A zinc was discussed. No decision has yet been announced, but it is expected that the fixed price decided upon will be around 12.50c. to 13.50c. per pound for this grade. Storms and railroad congestion continue to delay metal in transit.

Antimony.—There has been further Government buying, but it has been very quietly done. It has been sufficient to reduce spot stocks and the market is firm at 14c. to 14.25c., New York, duty paid, for Chinese and Japanese grades for spot and early delivery.

Aluminum.—The market is quiet at 36c. to 38c. for No. 1 virgin metal, 98 to 99 per cent pure, for spot and early delivery. No decision as to price fixing is announced yet.

Old Metals.—The market is quiet. Dealers' selling prices are nominally as follows:

	Cents per lb.
Copper, heavy and crucible (nominal)	23.50
Copper, heavy and wire (nominal)	23.50
Copper, light and bottoms	21.00 to 21.50
Brass, heavy	17.00 to 17.25
Brass, light	12.25 to 12.50
Heavy machine composition	24.00 to 24.25
No. 1 yellow rod brass turnings	13.50 to 14.00
No. 1 red brass or composition turnings	19.00 to 20.00
Lead, heavy	6.25
Lead, tea	5.00
Zinc	6.00

Chicago

JAN. 22.—Fair sized quantities of copper and lead have changed hands. Otherwise the metal market has been dull. Official prices of copper, 23.50c. for carloads, and 24.67 1/2c. for part carloads rule transactions. Receipts have been somewhat better. Tin is quiet at 85c. to 95c. per pound, but little is available. There is no excitement, because of the understanding that fresh supplies are near. Lead is stiff, the leading interest holding at 6.75c. with outsiders asking 6.85c. Spelter is dull at 7.70c. and antimony dead at 16.50c. In old metals there are no changes.

St. Louis

JAN. 22.—Non-ferrous metals have been rather quiet during the week because of the weather conditions and their effect upon business. In carload lots lead is quoted at 6.75c. to 6.85c.; spelter, 7.75c. In less than car load lots the figures are: Lead, 7c.; spelter, 8.50c.; tin, 90c.; copper, 25.12c.; Asiatic antimony, 18c. In the Joplin district the weather continued to restrict production and shipments as well. In consequence, the market was not particularly active. Zinc blende was quoted, on a basis range, 60 per cent metal, \$50 to \$70 per ton with the average for the week for the district at \$55 because of the heavy predominance of second grade ores in the business of the week. Calamine was dull at \$30 to \$34 per ton basis of 40 per cent metal with an average for the week for the district of \$32 per ton. Lead ore was firm, basis of 80 per cent metal, at \$80 per ton, with the average for the week for the district at \$81 per ton because of the premium grades brought in and sold. We quote dealers' buying prices on miscellaneous scrap metals as follows: Light brass, 10c.; heavy yellow brass, 14c.; heavy red brass and light copper, 19c.; heavy copper and copper wire, 20c.; pewter, 25c.; tinfoil, 42c.; zinc, 5c.; lead, 5.50c.; tea lead, 5c.

New Maximum Stress Rules for German Steel

In order to save iron and steel in structural work, the German Ministry of Public Works has issued instructions to limit their use to the lowest possible scale, according to the London *Iron and Coal Trades Review*, and to substitute other materials in building construction wherever possible. The circular also states that there is no objection to exceeding within certain bounds the hitherto permissible maximum working stress in the design of certain structures for the Ministry of War. The working stress in mild steel may in such cases be increased to 7.62 tons and even to 9.52 tons per square inch, but must on no account exceed 10.16 tons per square inch.

New American Iron and Steel Institute Members

Additional members were elected to the American Iron and Steel Institute on Jan. 16 as follows:

Herman M. Knapp, Cincinnati, contracting manager of the American Bridge Co.

J. Heber Parker, Reading, Pa., vice-president and metallurgist of the Carpenter Steel Co.

Wilbur W. Gregg, Kalamazoo, Mich., manager Harrow Spring Co.

Alfred H. Chapin, Springfield, Mass., president and treasurer Moore Drop Forging Co.

Edgar J. Reilly, Youngstown, Ohio, general sales manager Wm. B. Pollock Co.

James P. Walker, Chicago, manager of order department Illinois Steel Co.

O. C. Davidson, Iron Mountain, Mich., general superintendent Oliver Iron Mining Co.

E. Theodore Sproull, Warren, Ohio, general manager of sales the Trumbull Steel Co.

George Ward Balkwill, Cleveland, proprietor Cleveland Steel Casting Co.

Joseph K. Pollock, Cincinnati, member of firm Rogers, Brown & Co., and president Union Furnace Co.

James Byrd Kennedy, Youngstown, chairman board of directors Brier Hill Steel Co.

Donald C. Bakewell, Pittsburgh, president Duquesne Steel Foundry Co.

Robert A. Bull, Pittsburgh, vice-president and general manager Duquesne Steel Foundry Co.

Edward Ford Clark, Warren, Ohio, president Liberty Steel Co.

Ewen C. Pierce, Cleveland, Brown Hoisting & Conveying Machine Co.

John H. Bradley, Buffalo, general manager Pratt & Letchworth Co.

Q. A. Fisher, Pittsburgh, treasurer Jones & Laughlin Steel Co.

William Henry Fitch, Pittsburgh, mechanical engineer Fuller Engineering Co.

William McBride, Pittsburgh, president Fort Pitt Spring & Mfg. Co.

A. B. Marble, Boston, manager of sales Jones & Laughlin Steel Co.

George P. Warner, Buffalo, manager of sales Pratt & Letchworth Co.

H. F. Holloway, 165 Broadway, New York, manager of sales Jones & Laughlin Steel Co.

Charles H. Sloan, Newport, Ky., general superintendent Andrews Steel Co.

Hamilton B. Bole, Cleveland, general manager Hydraulic Pressed Steel Co.

W. H. Geesman, Youngstown, assistant general manager Brier Hill Steel Co.

Milford Wortham, Temple, Pa., vice-president and superintendent Seaboard Steel & Manganese Corporation.

George Milton Clark, New Albany, Ind., president Ohio Falls Iron Co.

William F. Robertson, Cincinnati, president Tower Mfg. Co. and W. F. Robertson Steel & Iron Co.

Morris L. Stephenson, Jackson, Ohio, president Wellston Iron Furnace Co.

William J. Bradley, Troy, N. Y., manager Rail Joint Co.

George L. Claypool, Pittsburgh, secretary and treasurer Banning, Cooper & Co.

William W. Hearne, Philadelphia, managing director Matthew Addy Co.

Ira O. Jones, Chicago, assistant general superintendent Wisconsin Steel Co.

John Turner Moore, Reading, Pa., president and treasurer Reading Steel Casting Co.

Mccormick G. Moore, Reading, Pa., vice-president and sales manager Reading Steel Casting Co.

Albert N. Abbe, New Britain, Conn., purchasing agent American Hardware Corporation.

Samuel Osborne Hobart, Pottstown, Pa., manager of blast furnaces Eastern Steel Co.

John B. Smiley, 111 Broadway, New York, president Smiley Steel Co.

John C. Vance, Chattanooga, Tenn., president John C. Vance Iron and Steel Co.

Samuel E. Stephenson, Jackson, Ohio, vice-president and general manager Wellston Iron Furnace Co.

John F. Havemeyer, 42 Broadway, New York, president Concrete Steel Co.

George C. Moon, Garwood, N. J., manufacturer of wire rope.

Lawrence Hamill, Cleveland, president Hamill-Hickox Co.

Robert D. Samuels, 411 Fifth Avenue, New York, assistant secretary and treasurer and purchasing agent National Enameling & Stamping Co.

William J. Fleming, Cleveland, assistant manager of sales Bourne-Fuller Co.

Roscoe C. Skiles, Shelby, Ohio, vice-president Ohio Seamless Tube Co.

John B. Guernsey, Roanoke, Va., vice-president Old Dominion Pig Iron Corporation.

Charles J. McIntosh, Waukesha, Wis., president Federal Bridge & Structural Co.

George E. Hitchins, McKeesport, Pa., superintendent Steel Dept. National Tube Co.

Edwin T. Wood, Steubenville, Ohio, metallurgist LaBelle Iron Works.

Charles E. Beeson, Pittsburgh, secretary Pittsburgh Steel Co.

David P. Bennett, Pittsburgh, vice-president and treasurer Pittsburgh Steel Co.

John Bindley, Pittsburgh, vice-president Pittsburgh Steel Co.

Charles Gibbons Davis, Philadelphia, proprietor of Davis Brothers rolling mills, etc.

Samuel D. Latty, Cleveland, president Kirk Latty Mfg. Co.

Charles D. Robb, 30 Church Street, New York, member of firm of C. W. Leavitt.

Carleton S. Koch, McKeesport, Pa., president Fort Pitt Steel Casting Co.

John Kleffer Furst, Newcastle, Pa., vice-president and chief engineer Pennsylvania Engineering Works.

Frederick W. White, 55 John Street, New York, president Mutual Chemical Company of America.

Harry L. McGee, 42 Broadway, New York, secretary and vice-president Concrete Steel Co.

William Osgood Batchelder, Chicago, manager of power and mining department General Electric Co.

W. C. Franz, Sault Ste. Marie, Canada, president Algoma Steel Corporation, Ltd.

Charles C. Steel, Williamsport, Pa., general manager of sales Sweet's Steel Co.

Douglas Scott Thropp, Everett, Pa., general manager of quarries, ore and coal mines for J. E. Thropp.

Charles H. Newcomb, Philadelphia, resident manager of sales Crocker Brothers.

Harris Kennedy Masters, 7 Hanover Square, New York, head of ore department W. R. Grace & Co.

Alfred Stansfield, Montreal, professor of metallurgy McGill University.

Frank B. Clarke, Pittsburgh, vice-president Lucey Mfg. Corporation.

Albion H. Wardwell, McKeesport, Pa., assistant superintendent blast furnaces, National Tube Co.

Louis H. Winkler, Johnstown, Pa., metallurgist, Cambria Steel Co.

Adolph E. Brion, 417 Canal Street, New York, president Peter A. Frasse & Co., Inc.

Charles B. Ellis, 120 Broadway, New York, secretary to president American Vanadium Co.

Augustus D. Ledoux, 15 William St., New York, importer of pyrites.

Western Efficiency Society Elects Officers

The Western Efficiency Society, 327 South La Salle Street, Chicago, has elected the following officers and directors for 1918:

President, F. A. Carlisle, Friedlander-Brady Knitting Mills; first vice-president, S. E. Stout, Whiting Foundry Equipment Co., Harvey, Ill.; second vice-president, J. R. Shea, Western Electric Co.; secretary-treasurer, George C. Dent.

Directors: Chairman, F. M. Simons, Jr., Montgomery Ward & Co.; L. A. Blue, Allen B. Wrisley Co.; A. G. Bryant, Joseph T. Ryerson & Son; F. A. Carlisle, Friedlander-Brady Knitting Mills; George C. Dent; P. H. Myers, J. L. Jacobs & Co.; S. M. Ross, The Seng Co.; A. B. Segur, Johnson Chair Co.; S. E. Stout, Whiting Foundry Equipment Co., Harvey, Ill.

The Pressed Steel Car Co., Pittsburgh, has made changes in its organization as follows: J. H. Hackenburg, formerly assistant purchasing agent, has been made purchasing agent, succeeding the late H. J. Gearhard. H. B. Fisher and C. C. Clarke were made assistant purchasing agents. W. C. Howe, formerly in charge of the Allegheny plant, has been made assistant to Vice-President and General Manager J. B. Rider. J. C. Ritchey was appointed electrical engineer.

PERSONAL

Frederick W. Wood, whose retirement as general manager of the Sparrows Point, Md., plant of the Bethlehem Steel Co. has been announced, has rounded out 40 years of continuous and exacting service in iron and steel manufacture and in that time has been a fa-



miliar figure in the councils of the industry. He started with the Pennsylvania Steel Co. in 1877 in the open-hearth department and later was superintendent of blast furnaces and in turn assistant general superintendent, general superintendent and general manager. He had charge of the designing and construction of the plant at Sparrows Point and was elected president of the Maryland Steel Co. on its organization in 1891 to operate this plant. In addition to the advisory relation he now assumes with the Bethlehem Co., his activities will continue in connection with various public interests.

Price McKinney, president McKinney Steel Co., Cleveland, has been elected a director of the Continental and Commercial National Bank, Chicago.

Frank J. Foley, formerly manager of the mining department of the Westinghouse Electric & Mfg. Co., became connected on Jan. 1 with the Edison Storage Battery Co., Orange, N. J., as manager of the mining and traction department, with headquarters at the main office in Orange. He helped install the original multiple unit control on the Brooklyn Rapid Transit system, the switchboards and turbines in the Kent Avenue power station of the Brooklyn Rapid Transit Co., and the turbo-generator unit at the Waterside station of the Consolidated Gas Co., New York.

Chas. A. Swan, formerly superintendent of the Becker Steel Co. of America, has joined the sales organization of the Hess Steel Corporation, Baltimore, and will represent the corporation in the Cleveland and Detroit territory.

F. M. Nourse has joined the advertising department of the Cutler-Hammer Mfg. Co., Milwaukee, in the capacity of technical writer. Mr. Nourse graduated in electrical engineering from the University of Illinois in 1912, and has been engaged since in various branches of engineering work.

Franklin T. Chapman, body engineer and assistant to the manager of the Olympian Motors Co., Pontiac, Mich., has resigned to become assistant general sales manager at the E. F. Houghton & Co. plant, Philadelphia, vacated by W. Burton Piersol, who has become assistant general manager of the Bethlehem Shipbuilding Corporation.

Frank Wollaeger, Jr., secretary Kempsmith Mfg. Co., Milwaukee, manufacturer of milling machines, has been called into active service as an enlisted man in Milwaukee Base Hospital No. 22, which is now undergoing training at Milwaukee in preparation for over-

seas service. His duties have been assumed by Peter Lowe, assistant secretary and general sales manager of the company.

P. C. Gunion, who has been in the sales department of the Hyatt Roller Bearing Co., Newark, N. J., for two years, recently as manager of the Pittsburgh office, has been made advertising manager of the industrial bearings division of the company.

E. Cooper Wills has been made superintendent of the Nagle Steel Co.'s plant at Rahway, N. J., operating one 30 and one 40-ton basic open-hearth furnace on steel for plates for the United States Government.

Prof. A. N. Talbot, who has been elected president of the American Society of Civil Engineers, was graduated from the University of Illinois in 1881, and has been a member of the faculty of that institution since 1884. Since 1890 he has been head of the department of municipal and sanitary engineering and in charge of theoretical and applied mechanics and has directed important investigational work in engineering materials, reinforced concrete, railroad track, hydraulics, water works and sewerage. He is past president of the Society for the Promotion of Engineering Education and past president of the American Society for Testing Materials. The University of Pennsylvania has conferred upon him the honorary degree of Doctor of Science and the University of Michigan, the honorary degree of Doctor of Engineering.

Nelson P. Hall has taken up the duties of district sales manager for the Chicago territory of the Van Dorn & Dutton Co., gear specialist, Cleveland, and will occupy offices at 14 East Jackson Blvd.

At the annual meeting of the Engineers' Society of Western Pennsylvania, held in its rooms in the Union Arcade Building, Pittsburgh, W. E. Snyder, mechanical engineer American Steel & Wire Co., was elected president, W. C. Hawley, Pittsburgh Water Co., vice-president, and A. Stucki, contracting engineer, Oliver Building, Pittsburgh, treasurer. Robert Linton and A. N. Diehl, the latter assistant to the vice-president of the Carnegie Steel Co. at Pittsburgh, were elected directors for the three-year term. K. F. Treschow is secretary, having succeeded Elmer K. Hiles, who is now in service in France with the Engineers' Reserve Corps.

Frank A. Robbins, Jr., who was appointed general manager of the Steelton, Pa., plant of the Bethlehem Steel Co., on Jan. 15, entered the employ of the Pennsylvania Steel Co. in 1902, the year he was graduated from the Massachusetts Institute of Technology in mechanical engineering. He was born in 1881 at Pittsfield, Mass. His first work at Steelton was in the shops and in the drafting room until 1909, when he entered



the office of the vice-president of the company, becoming assistant to the vice-president in 1915. He was made assistant to the general manager in 1916, when the Bethlehem Steel Co. acquired the Pennsylvania Steel Co. He has been secretary and treasurer of the Asso-

ciation of American Steel Manufacturers since 1913. He is a member of the American Society for Testing Materials and the Engineers' Society of Pennsylvania.

H. A. Hornor has resigned, effective Feb. 1, his position as electrical engineer of the New York Shipbuilding Corporation, Camden, N. J. He has been connected with this company for 17 years. He is chairman of the marine committee of the American Institute of Electrical Engineers and is author of the article on marine applications in the Standard Handbook for Electrical Engineers.

Paul Caldwell, who joined the sales organization of the Cleveland Crane & Engineering Co., Wickliffe, Ohio, a few months ago, is now located in the company's New York office as district manager. P. J. Hopkins continues as district manager of the Cleveland Punch & Shear Works Co.

Sterling H. Bunnell, chief engineer of R. Martens & Co., Inc., 24 State Street, New York, has just returned from a year's journey via the London office of the company to Russia, Siberia, Japan, China and the Philippines, visiting en route all of the offices of R. Martens & Co., with the exception of Odessa. He reports that business of an indispensable nature is going on in Russia all the time, but it is difficult often to determine whether there is profit or loss.

Edward M. Kerwin, secretary-treasurer Sellers Mfg. Co., Chicago, has been commissioned a captain in the Ordnance Department Reserve, U. S. A., and is now stationed at Washington. George M. Hogan has been appointed assistant secretary and general sales agent of the company. W. H. Siegmund has been made assistant treasurer and R. A. Van Houten, formerly plant manager, has been elected a vice-president. The changes were necessitated by Mr. Kerwin's absence on leave.

George A. Turville, secretary and treasurer Crucible Steel Co. of America, Pittsburgh, has been elected president of the Midland Savings & Trust Co., Midland, Pa. J. W. Dougherty, president Pittsburgh Crucible Steel Co., has been made secretary and treasurer of the same bank.

J. W. Powell, vice-president of the Bethlehem Shipbuilding Corporation, Ltd., the holding organization of the Union Iron Works, San Francisco, spent several days in San Francisco this month. It is said that he inaugurated plans which will increase the output of the San Francisco plant, and that employment for 14,000 men will be given during the next two years.

W. A. Folger, second vice-president of the Pacific Tool & Supply Co., San Francisco, has just returned to his desk after a month's illness, brought about by the hard work of the past year.

Henry M. Shaw, for several years connected with the sales department of the Sherritt & Stoer Co., Philadelphia, has become associated with the Monarch Machinery Co., Philadelphia.

A. Wood, works manager, Niles Tool Works Co., Hamilton, Ohio, has been elected a director of the Hamilton Club, to fill the unexpired term of Eugene Seybold, who is now in the army.

E. P. Bernheim, vice-president the Alvey-Ferguson Co., Oakley, Cincinnati, has been commissioned a captain in the Ordnance Department, United States Army Reserve Corps.

R. J. Morgan, formerly supervisor of sales for the American Steel Export Co., Woolworth Building, New York, has been appointed assistant general manager of sales.

Archibald J. Wolfe has been appointed manager of the Far Eastern division of the W. J. Crouch Co., Inc., New York. Mr. Wolfe for more than 10 years has acted as adviser to American manufacturers on opportunities abroad and to foreign buyers on American products. He has been in charge of various sections of the foreign department of the National Association of Manufacturers, and for three years traveled abroad

as commercial agent of the Department of Commerce. He is author of a number of reports published by the Government, the one on "Foreign Credits" having been adopted as a text book in several universities and included in the course of reading at Harvard. Mr. Wolfe at one time represented the United States Steel Corporation in Petrograd and traveled for the corporation in the Balkan States and Asia Minor.

C. E. Conkling, formerly with the Mesta Machine Co., Pittsburgh, has been commissioned a captain in the Ordnance Department of the army. He will be attached to the steel production division, which is charged with the duty of speeding up production in that industry.

Auguste J. Rossi of the Titanium Alloy Mfg. Co., Niagara Falls, N. Y., was presented with the Perkins medal on Friday evening, Jan. 18, at a meeting of prominent chemists at the Chemists' Club, New York. Among the speakers were F. A. J. Fitz Gerald of the Fitz Gerald Laboratories, Niagara Falls, past president of the American Electrochemical Society, and William H. Nichols, past president of the Society of Chemical Industry. Mr. Nichols made the presentation address. The Perkins medal is awarded annually by the Society of Chemical Industry in recognition of exceptional services rendered for the advancement of chemical industry.

Lewis D. Rights, contracting manager at 45 Broadway, New York, of Lewis F. Shoemaker & Co., as secretary-treasurer of the war service committee of the Steel Fabricators of the United States, has located offices in the Munsey Building, Washington. The committee is substantially a selling and distributing committee for the bridge, building and plate fabricators of the country.

John D. Stout has been appointed Chicago representative for the Terry Steam Turbine Co., Hartford, Conn. He was at one time assistant engineer of the company and was recently transferred from the New York office, where he was assistant manager.

J. H. Bickley, mechanical engineer with the Reading Iron Co., Reading, Pa., for 17 years, has resigned to accept the position of superintendent of inside engineering, for the Merchant Shipbuilding Corporation, Bristol, Pa.

Uniformity of Indian Manganese Ore Imports

As an example of the uniformity of Indian manganese ores which have been received in this country in recent years, the following table is interesting. It is from the records of the Matthew Addy Co., Philadelphia. Each date represents a cargo.

Date	Manganese, %	Silica, %	Phosphorus, %	Moisture, %
1915				
Oct. 10.	50.800	5.670	0.092	1.143
Dec. 16.	51.064	6.800	0.098	0.400
Dec. 22.	50.937	7.760	0.096	0.930
1916				
Mar. 30.	50.799	7.570	0.095	0.430
1917				
Jan. 24.	51.514	5.810	0.074	0.733
Feb. 9.	50.840	6.875	0.097	1.265
Feb. 17.	51.830	6.635	0.073	0.645
Feb. 22.	51.978	7.295	0.089	0.642
Mar. 19.	52.227	7.555	0.097	0.472
Apr. 9.	52.808	4.980	0.063	0.348
Apr. 11.	53.071	5.440	0.071	0.356
Apr. 11.	52.986	5.410	0.074	0.335
June 11.	50.972	6.320	0.079	0.428
June 18.	51.289	6.795	0.090	0.344
June 20.	51.126	6.650	0.098	0.698
June 25.	50.375	6.115	0.075	0.851
June 30.	51.747	7.975	0.106	0.917
Sept. 12.	51.669	7.905	0.102	0.680
Oct. 1.	51.638	7.270	0.091	0.620
Oct. 8.	52.148	5.830	0.086	0.753
Nov. 5.	50.080	6.660	0.114	1.090
Nov. 7.	50.406	6.630	0.076	0.853
Nov. 8.	51.731	6.510	0.092	0.693
Nov. 13.	50.584	7.810	0.089	0.820
Nov. 20.	51.901	7.045	0.086	0.844
Dec. 27.	51.994	5.655	0.084	0.818
Dec. 31.	51.227	6.400	0.071	0.635

Judging from this table, the imports in 1917 have been fairly large, probably exceeding those of 1915 and 1916 as received by all importers.

POOLING STEEL OUTPUT

Drift Toward Varying Prices to Producers with Resale at Flat Prices

WASHINGTON, Jan. 22.—Sentiment in official circles here is unquestionably drifting toward the project, originally suggested by members of the Federal Trade Commission, for pooling the output of the iron and steel industry as a basis for the revision of the controlled price schedule which it is expected will be made before its expiration on March 31. As legislation will be required for the execution of such a plan, there is no danger that either producers or consumers will be taken by surprise.

The correspondent of **THE IRON AGE** is in a position to state that the Federal Trade Commission is not the only governmental body that has given serious consideration to the fact that fixing iron and steel prices to bring maximum production involves a greater profit per unit to the large integrated establishment than to the small concern. The War Industries Board and other officials of the Council of National Defense have also given thoughtful attention to this matter, and during the conferences which resulted in the closing days of December in a three months' extension of the September schedule of the controlled prices the steel men received a plain intimation from Chairman Willard that, in his opinion, the prices ought to be fixed by a more flexible system than that which gave the large producers a double profit, namely, the margin upon which the small manufacturer can make a living plus that due to the great economies arising out of integration.

What results may flow from the consideration of this question by the War Industries Board cannot be foreshadowed. Already Mr. Willard has resigned his post, hardly concealing the fact of his complete disgust at the inefficiency of the War Industries Board because of the narrow limitations of its authority. The impression is strong here that Mr. Willard's resignation is the beginning of the disintegration of the War Industries Board and that within a short time there will be a radical reorganization of the Council of National Defense if, indeed, that body is not abolished should Congress establish a Director of Munitions with supreme powers.

Pooling Possibly by Director of Munitions

It is quite within the bounds of possibility that before the schedule of controlled iron and steel prices, recently extended, again expires on March 31, all the functions of the War Industries Board in the negotiation of purchases may be in the hands of a new Director of Munitions. A considerable contingent of the members of both houses of Congress are of the opinion that legislation will be enacted at an early date that will give the President, acting either through the proposed Director of Munitions or some other agency, the power to purchase the entire output of the iron and steel industry at prices within his discretion, to pool the product and sell the surplus over and above Government requirements to all comers at uniform prices. Whether this latter measure will be brought forward in the form of the pending Pomerene bill or as a supplement to the legislation now under consideration by the Senate Committee on Military Affairs creating a Director of Munitions remains to be seen.

The fact that the Pomerene bill has already been practically approved by the Federal Trade Commission is an argument in its favor, viewed from a parliamentary standpoint. On the other hand, there will be some advantage in coupling the proposed steel purchase bill with the legislation now being formulated by Senator Chamberlain's committee, as the various bills could then be brought forward in a single budget and considered simultaneously.

It is significant of the interest of the Federal Trade Commission in this subject that its members have already suggested amendments to the Pomerene bill which would enable the Government to pool the output

of the iron and steel industry and actually to buy and sell the entire product at prices to be fixed by the President or his agents. The modifications of the Pomerene bill suggested by the commission relate to nearly all its important provisions but those specifically authorizing the President to create an agency to sell the product of the industry are contained in the following section, the language inserted by the commission in the original bill being indicated in italics, while that stricken out is inclosed in brackets:

Or if the President of the United States shall be of the opinion that he can thereby better provide for the common defense and the purposes aforesaid and whenever, in his judgment, it shall be necessary for the successful prosecution of the war, then he is hereby authorized and empowered to require any or all producers of iron ore, iron, steel and their products in any section of the United States, or in the entire United States, to sell their products or *designated portions thereof* only to the United States through an agency to be designated by the President, such agency to regulate the resale of and to resell such iron ore, iron, steel and their products or *designated portions thereof* and to regulate and fix the prices thereof, and to establish rules for the regulation of and to regulate the [methods of] production, shipment, distribution, apportionment, or storage thereof among dealers, consumers, domestic or foreign, and to make payment, distribution, apportionment, or storage thereof among or to the person or persons legally entitled to said payment.

In the opinion of legislative experts the original bill would have authorized the pooling of the output of the industry, but the trade commission deemed it advisable to make it clear that the proposed law contemplated an agency not only to "regulate the resale of" but also actually "to resell" all or any part of the current production of iron and steel.

Production Control Bill in House

It is among the possibilities that action extending Federal control over the production of iron and steel may originate in the House. Representative Kelly of Pennsylvania, on Jan. 16, introduced a bill "to provide further for the national security and defense by encouraging the production, conserving the supply, and controlling the distribution of coal, oil, copper, iron and other metalliferous minerals, etc.," which has been referred to the Committee on Interstate and Foreign Commerce. The preamble to this measure emphasizes the necessity to secure adequate supplies and equitable distribution of these products "at a reasonable price, which shall not include any monopolistic profits."

In an informal discussion of the pooling plan, which first began to attract public attention as a result of a statement given by him to the press a few weeks ago, Trade Commissioner Victor Murdock said to the correspondent of **THE IRON AGE**:

We must protect the Government against the payment of prices which represent more than reasonable profits, for no one can say how heavy the burden to be imposed upon the taxpayers by this great war will be and the necessities of the Army and Navy should not be permitted to excuse the expenditure of an unnecessary dollar.

It hardly needs mathematical demonstration to show that a price at which a small manufacturer, who must purchase his materials in raw or semi-finished form, can make a living profit will show a margin in the case of a big, fully integrated concern that is exorbitant and that the Government cannot pay without doing a great injustice to the taxpayers and without imposing a heavy and altogether unjustifiable burden upon private consumers who are governed by the officially controlled prices. A price that is reasonable to a small producer must be much greater than would be fair to a big manufacturer, not only because the big concern can turn out its product at a lower net cost but also because, owing to the volume of its production, it can afford to operate on a much smaller margin of profit. It hardly seems to require more than a moment's consideration of these facts to demonstrate that a living price for the thousands of small producers must mean little short of profiteering for the big corporations who produce their own materials and make a separate profit on every stage of manufacture.

But if production is to be obtained every small manufacturer, if he has a right to be in the business at all, must be paid a price that will enable him to live and if this price is to govern the entire industry the result is obvious. Pooling the output of all manufacturers, big and little, allowing each a fair profit only and turning the product over to the Government and private consumers at a flat average price would

seem to be a thoroughly efficient solution of this problem and certainly it is the only one that has so far been suggested.

Extension of Industrial Combination Expected

The proposition to cut down the profits of the big completely integrated industrial establishments by allowing them only a reasonable margin of gain in a pooling arrangement is not an attack upon the so-called trusts. The big combinations of capital and equipment have come to stay. They command economies which the small individual producer cannot possibly secure and, if they are limited to reasonable profits, they cannot fail to operate in the interest of the great mass of consumers and, in a crisis like this, in the interest of the Government and the taxpayers. But these big corporations cannot safely be left to regulate their own profits and if they are to have the approval of the Government they must submit to a certain degree of supervision that will insure their being operated in the public interest as well as for the purpose of making money for their stockholders. I look to see the extension rather than the curtailment of the industrial combination, but I also expect that there will be a degree of official supervision of their operations commensurate with the franchise they enjoy.

I firmly believe that one of the great lessons of the war will be the necessity that America should secure larger foreign outlets for her surplus products and that these campaigns should be prosecuted by such combinations as are specifically legalized by the so-called Webb-Pomerene bill. Our producers have reached the point where they will no longer be satisfied in feeding upon each other. There are many foreign markets to be conquered and in nearly all of them foreign combinations of capital and enterprise will be encountered, many of them openly aided and sustained by governmental support. To make progress under such conditions will test the business ability of our ablest men and will require the banding together of concerns having a common interest. These export combinations, however, must be closely supervised, for we can safely permit such associations to do many things in foreign markets which it would be most unwise to let them do at home. Unification of systems and pooling of resources are the means that will enable these export combinations to succeed, however, for every intelligent man must acknowledge their efficiency. Such methods should not be stifled but merely supervised and given a proper direction.

The Ignorance as to Manufacturing Costs

There is one consideration of great importance, in my opinion, which should be kept in mind in connection with any calculation of prices to be paid small producers for their output in any pooling combination. There is an extraordinary amount of ignorance on the part of the average small manufacturer concerning the exact cost of producing his goods. Many of them have made little or no effort to get at this important factor and yet it must determine not only the reasonableness of any price that may be paid for the manufacturer's goods but also whether he has a right to be engaged in the industry in which he is operating. It would be highly beneficial in my opinion, if some official agency could issue from time to time tables showing the cost of producing staple articles in, say, three classes of manufacturing establishments, namely, those producing at lowest cost, those whose costs are highest and those showing an average cost. These would carry very valuable information to manufacturers and would suggest to uneconomically managed concerns the desirability of very careful investigation to determine the cause of their high costs. It would also be of value to the Government in any pooling arrangement as an aid in determining the consideration that should be shown to small concerns having very high costs.

Locomotive Orders and Inquiries

Locomotive orders so far reported in January include 15 Mikado locomotives ordered by the Delaware, Lackawanna & Western, 20 Mikado locomotives ordered by the Chilean State Railways and nine mountain type locomotives ordered by the Rhodesian Railways, all from the American Locomotive Co. The principal inquiries include 50 locomotives from the Chicago, Milwaukee & St. Paul, 25 Mikado locomotives from the Missouri, Kansas & Texas, and five Mikado locomotives from the Western Pacific.

The Youngstown Sheet & Tube Co., Youngstown, Ohio, has opened an office in Cleveland with G. G. Stuart in charge. The St. Louis office of the company has been moved to rooms 706 and 707, Post-District Building.

Industrial Lighting Code for Ohio

A code of industrial lighting for factory, mill and other work places in Ohio, prepared by a committee headed by F. C. Caldwell, head of the electric department of engineering, Ohio State University, was the subject of a preliminary hearing at the Hollenden Hotel, Cleveland, Jan. 16. In attendance were many representatives of steel works and of manufacturing plants in various metal working lines.

The meeting was presided over by Victor T. Noonan, director of safety of the Ohio Industrial Commission. It was explained that the code itself and the table making a general classification of various industries follow the line of the standards of the Illuminating Engineering Society and the code adopted in New York and Pennsylvania, but that it has a new feature in an appendix that classifies lighting for various kinds of plants and operations. In the code proper there are six grades symbolized by letters, these covering roadways and yard thoroughfares, intermediate and auxiliary spaces in interiors, rough operations, medium operations, fine operations, and special cases. The minimum foot candle intensities and the foot candle intensities corresponding to good practice are also given.

For example, lighting requirements in a foundry are specified as C, indicating rough operations requiring a minimum light of $1\frac{1}{4}$ foot-candle intensities, and of 2 to 4 as good practice for rough molding, charging floor, tumbling and cleaning. Fine molding and core making are specified as D, or medium operations requiring a minimum of 2 foot-candle intensities and of 3 to 5 for good practice. Mr. Noonan explained that the New York and Ohio Industrial Commissions were planning to make tests of lighting requirements under the various classifications of work and would compare these tests.

A discussion brought out numerous objections and attention was also called to the indefiniteness in some of the classifications. As the code reads, light of the same intensity would be required in the storage part of a rolling mill as around the moving machinery. A suggestion was made that a clause be inserted regarding reflectors. The code prohibits the use of flood lighting, which was declared often desirable for temporary use.

A hearing will take place in Cincinnati, and manufacturers of lighting systems and mechanical devices in connection therewith will be asked to make exhibits.

Texas Offer to Government

WASHINGTON, Jan. 22.—The declaration that the Government could have obtained an unlimited supply of pig iron at less than \$16 per ton, steel plates at \$45 per ton, and could have constructed steel ships at 20 per cent less than the average contract price of the Shipping Board has been made during the past week before the Senate Committee on Commerce and the House Committee on Expenditures in the Navy Department by L. P. Featherstone of Beaumont, Tex., who has introduced himself in Washington as the President of the Texas Steel Co. and the East Texas Brown Ore Development Co. Under somewhat searching cross-examination, Mr. Featherstone admits that the Texas Steel Co. up to the present time has made no steel and has no plant for the purpose, but he charges that carefully laid plans of his companies to assist the Government in producing a large number of steel ships and in procuring steel material of various kinds were frustrated by the steel committee of the American Iron and Steel Institute which disapproved his project when it was presented to the committee through the United States Shipping Board.

The Stanley Works, New Britain, Conn., has purchased 52 per cent of the stock of a large machinery plant near Kobe, Japan. The new situations created by the war has lead Japan to make several such alliances with American and English manufacturers, it is reported.

Widespread Closing Down of Industry

(Continued from page 252)

not done six months ago when we should have seen what was coming. In taking a step of this kind the feelings and pocket books of a lot of people are sure to be hurt, yet if hundreds of vessels cannot get away because of a lack of coal, and the five-day shut down will enable them to get away, I say shut down five days.

Chicago District Foundries

Foundries not doing Government work are prohibited from receiving deliveries of coke, Jan. 18 to 22, inclusive, until the specified requirements given preference are filled, and all must shut down for the five days unless specially exempted. In Chicago there are many having war business. A local steel foundry, which has several orders for both Army and Navy departments, and which uses hydroelectric power derived from the Sanitary District of Chicago, remained in operation after its head submitted an affidavit to the rulings committee of the local fuel administration. The committee informed him that it did not feel it had authority to tell him to run or not to run, but to consult his lawyer. A gray-iron foundry working on a sub-contract was in a quandary until the main contractor gave the information that it was ordered to run by the War Department and that it expected the subcontractor to do its part. The W. A. Jones Foundry & Machine Co. shut down in accordance with the order, but hoped that it would not be down for the entire five days, inasmuch as it has contracts for machines used in the making of aeroplane propellers. Perhaps the most exercised individual around the Jones plant was the Government inspector stationed there to oversee the work. The company took advantage of the shutdown to install a new steam boiler.

Freight Congestion a War Effect

An executive of a coke company stated that no matter which way the question was considered it came back to the railroads, the order springing as much from the freight congestion as from any shortage of fuel. In his opinion the primary cause of the freight congestion was the great mass of finished war material, the bulk of which had been made in the East. With full co-operation the order should be of great benefit to the railroads. In the opinion of this official the fuel saving would not be of huge proportions. Too much coal, he said, had been shipped to the Northwest. His company's ovens are operating.

John D. Hibbard, Commissioner National Metal Trade Association, said he presumed that a large number of metal-working shops would operate as usual through having been granted exemption from the order by reason of their contracts for war supplies or machinery of one kind or another. Mr. Hibbard said:

When it comes to determining who is exempt and who is not, some nice questions arise. A man may argue that he is making shells, but the making of lathes wherewith to make the shells is equally important. I do not think there is any disposition to disobey the order, although questions may be raised as to its advisability and as to the manner in which it was made effective.

Another view was that if the people had been told by C. M. Schwab that there existed good, solid reasons for such an order they would have accepted it cheerfully, saying, "Well, if it is necessary, it is up to us," but, in the opinion of the man quoted, they are not willing to accept without question the judgment of the Fuel Administrator with his academic knowledge. He did not believe that the order had been well considered, nor was it right to put it in operation over-night.

Washington's Word Final

Joseph T. Ryerson, vice-president and treasurer Joseph T. Ryerson & Son, said his company would conform with the legal and full intent of the order. The big plant will remain closed Monday and no power will be used on any of the five days specified, although doing so seriously inconveniences some important work. Mr. Ryerson said:

If Washington says so, that is enough. There can be no doubt as to the terrific freight congestion in the East, and if the action taken will relieve it, I believe it to be a good thing.

Many machine shops have closed for the five-day period, while others will operate, but only on strictly war work which has been granted exemption. A local machine-tool company received a permit from Washington and, having been closed Friday and Saturday, sent special delivery letters to its force asking them to return Monday morning.

The machinery salesrooms in Chicago will be closed Mondays. H. W. Jones, president Marshall & Huschart Machinery Co., said:

We frequently hear men complaining because the United States is not doing enough to fight the war, yet the first time something is done which helps things along, but which hits them in some way they are filled with indignation at the Government. I believe the order should be regarded philosophically.

George A. Ranney, secretary-treasurer International Harvester Co., said that the Wisconsin Steel Co., a subsidiary of the harvester company, was operating two blast furnaces and one merchant bar mill, the latter using as fuel the gas from blast furnaces. Mr. Ranney said that by authority jointly given by the fuel and food administrations the binder twine factories of the company would be started, and it was hoped that similar exemption would be granted for the implement factories. The company arranged to pay its employees half pay during the shutdown, with a minimum of \$2 a day.

At the end of the second day of the enforced vacation of five days it is impossible to estimate the number of employees actually idle, in view of so many plants having secured exemption from the order, and the fact that further exemptions are being granted. The Allis-Chalmers Co., Milwaukee, received early notice of exemption, and the American Can Co., pending specific information as to its status from Washington, did not shut down, it being stated that its product was necessary to the preservation of food.

Several companies made arrangements to bear at least a part of the loss their employees would suffer as a result of the enforced lay-off. The Root & Vandevoort Engineering Co., East Moline, Ill., which is making both shells and guns, shut down pending word from Washington to resume.

Steel Made Is Being Rolled

CHICAGO, Jan. 23. (By Wire)—All ingots now being produced by the Illinois Steel Co. and the Inland Steel Co. are being rolled down in the manufacture of products required by the Government. The Illinois Steel Co. has in operation four blast furnaces at Gary and three at South Works and is making all the steel it can, but the total is not sufficient to care for Government work. The company has been running a few open-hearth furnaces at Gary and on Saturday put on three at South Works, getting the first product of the

latter Sunday. Coal is arriving at a better rate, and a week of good weather will make things nearly right again.

Until midnight Tuesday the Inland Steel Co. will confine its efforts to making shell steel, ship plates, ship shapes, bars and a few sheets strictly for the Government. It is running only 50 per cent, and all the steel it is making is being rolled. A bad feature is the necessity of readjusting rolling schedules. Coal continues to arrive at less than normal.

The Rock Falls, Ill., plant of the Russell, Burdsall & Ward Bolt & Nut Co. had not secured permission to run, late Monday afternoon, although permission had been granted to the Eastern plants of the company. The Western plant has coal sufficient for its needs and its managers want to operate on war business on which they have been urged to make quick deliveries. In the opinion of representatives of the company the universal shut-down may cause a shortage of raw material which will be a serious factor in the future. Jobbers and consumers have been holding off in placing orders and may later swamp the makers with their demands.

The American Car & Foundry Co. advertised in the newspapers to-day for its employees to return to work Tuesday morning, permission having been granted for resumption of operations. The company has been working night and day.

The Edwards Valve & Mfg. Co., Chicago, which is operating on fittings for the Navy, was shut down Friday and Saturday, but resumed Monday, a special permit being granted to resume on naval work only. The company also has a British fuse contract, but work on this is at a standstill. J. W. Morton, an officer of the company, said there are so many ramifications to the question as to the wisdom of the order that it is difficult to say in a few words what the results will be. In general, however, he believes that the action will be beneficial in clarifying the muddle in which transportation finds itself. His company has finished products which it has been unable to ship.

The local fuel administration committee has received from Washington a telegram stating that any deviation from the order must be countersigned by Dr. Garfield's office.

Hardinge Brothers, Chicago, makers of precision lathes, resumed Monday morning, after being idle Friday and Saturday. The firm was ordered to resume by Washington because it has Government work in hand. James L. McCormack, manager, greatly regrets

the temporary shut-down, as important work is delayed. Work which Hardinge Brothers were having done outside will be delayed five or six days, the sub-contractor not having a permit to run. This will delay the completion of machines that long. Mr. McCormack says the trouble is Eastern rail congestion and not coal. He was unable recently to ship patterns by express from Providence, R. I., to the West, and was obliged to pack them in trunks and transport them in that manner as personal property, this being done at the suggestion of the express company.

The W. A. Jones Foundry & Machine Co., Chicago, did not feel justified in running on Government work only, although the Rochester, N. Y., firm which is the main contractor, had secured a permit and urged running. The request was not regarded as sufficient authority.

The Calumet Steel Co. is shut down tight. S. S. Porter, secretary, believes benefit will come from clearing the tracks and states that owing to the light demand for rail carbon steel the company's line will suffer but little.

Chicago to Ask Modification

The H. W. Caldwell & Sons Co., Chicago, maker of elevating, conveying and power transmitting machinery, is one of the numerous firms displeased with the order. While not working directly on Government needs, a representative of the company stated that it was employed on equipment that might be regarded as one of the fundamentals of production and required by the makers of food and other essentials. He added that the shut-down meant loss of time, profit and overhead that never could be made up, to say nothing of the loss by employees of their wages. The exact loss probably never will be arrived at, in his opinion. The company was not embarrassed for coal.

The local plant of the Sullivan Machinery Co. was shut down, although the Eastern plant was permitted to run on repairs to mining machinery. It was said here that the company has no protest to make against the order and that the shut-down was in reality of but three and a half days duration, inasmuch as no work was done Saturday afternoon or Sunday.

The opinion is rather general in Chicago that good will come of the order in relieving the freight congestion in the East, but that it was unnecessary to apply its more drastic provisions to the Middle Western States. An appeal for modification is to be made at Washington by local business organizations and business men.

The Situation in Pittsburgh and Nearby Districts

The first intimation that Pittsburgh manufacturers and general business interests had of the drastic shut-down order of Fuel Administrator Garfield was contained in the Thursday morning editions of the papers, and it came like a thunderbolt out of a clear sky. The first action taken was to call a general meeting under the auspices of the Chamber of Commerce. It was held Thursday afternoon, Jan. 17, and was attended by nearly 700 manufacturers and business men. The consensus of opinion was that the Government had not treated the business interests fairly, in the fact that absolutely no notice had been given of the five-day shut-down; that this alone would go far to defeat the desired object, and would work a hardship on manufacturing and business interests alike that could have largely been avoided if a notice of one or two weeks had been sent out from Washington. There were many earnest protests against the action of the Government, and finally a committee of five was appointed to go to Washington and file a vigorous protest. However, after

further deliberation, sentiment seemed to cool down, but the wires between Pittsburgh and Washington were kept hot for hours with telegrams and telephone messages in an effort to try to have the order rescinded—all without avail.

Large manufacturing interests like the Carnegie Steel Co., the Jones & Laughlin Steel Co. and the Crucible Steel Company of America, stated that they had no official word from Washington, and until this came they would take no action looking to the closing of their plants. On Friday morning, Jan. 18, the official word was received in Pittsburgh, ordering the closing of all plants, whether working on war munitions or not. Exemptions were given in the order to a few departments of the Carnegie Steel Co. that were working on absolute war essentials, and also to a few other manufacturers for the same reason. The order virtually meant, however, the closing of every iron and steel and machinery plant in the Pittsburgh district, regardless of the kind of products it was making, excepting

blast furnaces and other plants requiring to be operated steadily to prevent damage to the property.

General Closing Down Orders

As soon as the official orders were received here all the steel companies and manufacturers of rolling mill and steel works equipment sent out orders to close the plants at once and keep them down until midnight of Tuesday, Jan. 22, and on Friday afternoon there was practically a cessation of steel manufacture in the Pittsburgh, Youngstown, Wheeling and other districts, and hundreds of thousands of men were notified not to report for duty until the following Tuesday night or Wednesday morning. Many concerns had arranged to take advantage of the idle time to make small necessary minor repairs to their plants, and this would have given work to thousands of men who otherwise would have been idle. However, late on Friday afternoon official word was received in Pittsburgh from Washington that exemptions from the shut-down order had been given to most of the large steel concerns here, also in Youngstown and other places. This put an entirely new phase on the matter, and where sharp criticism of the Government had ruled it gave way to the feeling that perhaps the Government was right and that something severe and drastic was needed to clear up the fearful railroad congestion that was imperiling the business of the whole country and was holding scores of vessels at the Atlantic seaboard which should be taking cargoes to our Allies and our army. As one large manufacturer put it, "A surgeon is better any time than an undertaker." Not only the steel business but all lines had reached the condition, and were steadily getting worse, where a surgical operation was absolutely necessary. Whether the operation will be successful only time will tell.

Indirect Government Work Not Exempt

In regard to the list of concerns exempted, as given elsewhere, and others that will be exempted later, it is to be understood that the exemptions apply only to plants or portions of plants that are working on direct Government orders for war materials. The advices from Washington have been very explicit on this point and read as follows: "Those portions of the plant devoted solely to the manufacture of steel for the emergency fleet and emergency munition work for the United States Government." Thus it will be clearly seen that exemption is not granted to concerns that are working on *indirect* Government orders, and these latter must keep their plants closed for the prescribed period, and also on each Monday up to and including March 25 next. It is stated that the list of exemptions will be increased from day to day, and that in a short time a list of absolute essentials will have been made up. To the concerns that are making these essentials fuel will be furnished in the order indicated by the necessity for the various products.

Whether the Government will succeed in relieving the railroad congestion, which was the whole object of the shut-down order, opinions vary a good deal. Some of the larger Pittsburgh steel manufacturers believe it will, and that the wisdom of the move will be quickly shown. Others are just as emphatic in saying that it will not have the desired result, and that the only thing to do is to put practical men in charge of the fuel and railroads, men of experience who will be able to handle the situation in the way it ought to be and must be handled.

D. W. Kuhn, fuel administrator for the Pittsburgh district, has given out the following rules in regard to the closing order:

No exemptions from the closing order will be issued by the local office; any firm or corporation desiring a permit to operate in violation of the ruling, must obtain a permit from

the United States Fuel Administration in Washington. No exceptions can be made to this rule.

Fuel is to be construed as coal, gas, wood, oil, or any burnable product. A plant using gas or wood for heat or power is construed under the order the same as a firm using coal.

Machine companies and repair shops must close, with the exception that necessary repair work for mining and drilling and transportation or exempted companies may be done, provided a permit is requested by the exempted company.

A mill owning its own mine may continue to operate both mine and mill if using fuel only for its own use.

A plant using water power may continue to operate.

A Considerable Scale of Operation

PITTSBURGH, Jan. 23—(By Wire).—On Saturday, Jan. 19, official advices were received in Pittsburgh that the following named concerns, in addition to those named in the first order from Washington, had been exempted from shut-down: Pressed Steel Car Co., Pittsburgh; McKeesport Tin Plate Co., McKeesport, Pa.; Pittsburgh Saw & Mfg. Co., Pittsburgh; Mesta Machine Co., Pittsburgh. All have heavy Government orders, and those portions of their plants engaged on these orders were at once started up, with the exception of the McKeesport Tin Plate Co. This company is getting coal for its plant from up the Monongahela River, and as this river is frozen solid all the way across, the company is without fuel and its plant is closed until a supply can be obtained. So far as known, all the blast furnaces in the Pittsburgh, Youngstown, Wheeling and nearby districts that are able to get coke are in blast; also the open-hearth steel furnaces that are working on Government steel, and in some cases the steel companies operated all the open-hearth furnaces they could and piled their ingots, as the blooming mills were down. The Brier Hill Steel Co. at Youngstown, Ohio, is understood to be operating its steel works to 100 per cent, all on shell steel for the Government. This is also largely true of the Youngstown Sheet & Tube Co. and the Republic Iron & Steel Co., both of Youngstown. In the Pittsburgh district, the Carnegie Steel Co., Jones & Laughlin Steel Co., Crucible Steel Co. of America and other companies also have operated their open-hearth plants practically full, and the output of steel not intended for the Government was piled in cold ingots to be re-heated and rolled later.

A Manufacturer's View

As showing the opinion of some of the large pig-iron interests on the wisdom of the shut-down order issued by Fuel Administrator Garfield, we present the views of two well-known manufacturers. E. W. Mudge, president of E. W. Mudge & Co., operators of the Claire and Ella blast furnaces at Sharpsville and West Middlesex, Pa., and also large producers of Connellsville coke, says:

"Referring to your request for a statement from me on Mr. Garfield's orders to close the manufacturing plants to relieve the serious shortage of fuel, I am interested as a producer and shipper of coal and coke, pig iron and other materials. The situation is not so much a shortage of fuel as it is a shortage of transportation. With reasonable transportation facilities, 100 per cent of fuel could be furnished to consumers in this country and a considerable amount could be exported for the benefit of our Allies. To demonstrate this, we give you the experience of our Westmoreland-Connellsburg Coal & Coke Co.'s works for the week ending to-day. We received during the entire week eight cars to load coke and 21 cars to load coal, being 8 per cent of our coke production and 16 per cent of our coal production. At our Reliance works we received 64 cars for coke, being 41 per cent; no cars whatever for coal. These plants are strictly modern in every respect, and we mine coal and manufacture coke as economically as anyone. The coal is not sold at a fancy price, but is

sold to railroads and the ordnance manufacturers—which production is absolutely necessary for the conduct of the war—and is sold at the Government price, whatever that might be from time to time.

"The correction of the present unfortunate state of affairs lies in the transportation. Large shippers for a great many years have realized that something serious was going to happen to the transportation facilities in this country. Our Interstate Commerce Commission has not been a constructive organization. In fact, I might say that it has been directly the opposite. We have not been paying sufficient revenue to the railroads for some years past to allow them to keep pace with the development of the country and guard against any extraordinary occurrences, such as the present war. As years go on, railroads must spend more each year for improvements that they can figure no return on—unproductive investments, as it were. They should be allowed much more for their services than they have been in the past. Their labor for some years has been very much dissatisfied, more so especially since the war. They have not been able to pay their employees within a considerable percentage of what manufacturers have been paying for practically the same kind of work, and they have been steadily losing their best men. There is hardly anyone in the employ of a railroad to-day that is not ready to leave and take a position with someone else where he thinks he will have some future. It has been the case with a great many employers of labor that when they were short of certain labor they would take men from the railroads by offering them a little more money. Through this dissatisfaction and through the losing of a great many of their best men from all departments, the railroads are not receiving proper efficiency from their employees. The number of new employees they are obliged to hire every day or every week also seriously affects their organization.

"Without proper transportation facilities, none of us can do any good in operation, and I believe that this matter can be improved in a very short time by conceding to all employees of the railroads a considerable advance in their wages. If necessary, pay them more money than manufacturers are paying. Make it an inducement for labor to associate itself with the railroads, and the Government should increase freight rates to cover such advance. It would be even better to overpay the men than to let things drift as they are now. There are certain lines of non-essential industries that are becoming slow, and men in those industries will be seeking employment. Why not make it an inducement for them and others to learn the railroad business?

"Next to the labor end I think the principal trouble is shortage of motive power. Surely we have enough locomotive manufacturers to build motive power sufficient to handle our business in a reasonable time. Manufacturers of locomotives have been running on other materials to a considerable extent for several years past, because they have not been getting sufficient orders from the railroads for motive power.

"A better system by the Government, especially at the seaboard cities, for unloading and taking care of its own materials, would help present conditions very much. The whole thing from my standpoint is that good management could straighten up very shortly all these matters and the same good management would keep them straight. Have we had that management, or are we to expect it in the near future? There are plenty of good men in this country, well able to handle the situation. Since the war began, have we been appointing the best men to the very important positions that are arising from time to time? This is something that the citizens of this country should consider very seriously."

An "Invalid Transportation Plant"

C. D. Dyer, vice-president of the Shenango Furnace Co., Pittsburgh, operating three blast furnaces at Sharpsville, Pa., gives his views of the shut-down order as follows:

"The wisdom of Dr. Garfield's fuel proclamation may only properly be judged by its results. It may be that the same unusual weather conditions which made something of a radical nature necessary will deny him the satisfaction of having made a successful coup. A conjecture that the Administration considered carefully whether to attack the transportation tie-up directly and affect the fuel condition as a result or to go the other way about may not be wide of the mark. No question exists that an invalid transportation plant is what is bothering the authorities and is at the root of all of our industrial troubles. The country has witnessed for two years the gradual failure of transportation. Tons of printer's ink have been used by way of discussion of this condition, in the nature of accusation and explanation, but what the Fuel Administration found was a condition facing the country which required action and not reflection. Any action to get results meant discomfort and deprivation to a great number of people, and it is self evident that the most effective means employed would excite the greatest criticism. It is not likely the Administration will be heard complaining that the criticism shows any lack. The causes that brought about the necessity still exist; that is, defective power, diluted labor, lack of funds, and bitter winter weather will tend to subtract from good results; and after this ban has been lifted other means must be devised to take the strain off the broken-down railroad system—in other words, to devote what energy it has left to those things only which will support the military establishment directly and indirectly. The administration realizes that this is a most difficult task. It is easy to talk of "non-essentials," but to discriminate justly is a task that will require most careful study.

"The present revolutionary conditions must be followed by systematic restrictive plans for conducting business, as the railroad plant will not improve materially during the war. Upon it depends the early winning of the war, a consummation which forbids 'business as usual!'"

Steel Works First Closed, Then Started

When the official advices reached Pittsburgh late on Thursday, Jan. 17, the Carnegie Steel Co. at once issued orders to close everything down at midnight Thursday except the blast furnaces, and this was done. At this time the Carnegie company was operating only 33 out of its 59 furnaces, no less than 22 being banked for lack of coke. The company also operated a few open-hearth furnaces, where steam is generated from blast furnace gas, but the number was very few. On Friday, Jan. 18, official word was received in Pittsburgh that open-hearth furnaces were exempt from the shut-down order and the company at once started as many open-hearts as men could be found to run, and for which fuel could be obtained. Later the official exemption of the Carnegie Steel Co. was received for such plants as were running on war materials, and the company started up its plate mills and other departments of its plants where war material is being made. On Tuesday, Jan. 22, the company issued orders that everything possible should go on at midnight of Tuesday. The Carnegie Steel Co. and, in fact, all the steel companies in the Pittsburgh and other nearby districts, carried out to the fullest extent possible the shut-down order.

The Jones & Laughlin Steel Co. promptly closed all

its plants except its blast furnace, but later started its open-hearth plants, and most of the output of steel was piled up in cold ingots to be heated and rolled later. The company also received official exemption for such mills as were rolling plates, tin plate, shell steel and other war material, and these were at once started up. This company resumed operations in full at as many plants as possible at midnight on Tuesday.

The National Tube Co. operating officials also interpreted the shut-down order to mean everything but the blast furnaces, and promptly on Thursday night closed all plants, including open-hearth furnaces, but on Friday official word was received that open-hearth furnaces were exempt and these were at once started as far as possible, most of the steel being piled cold while still later exemptions were received for all mills working on direct Government orders and these were started as fast as they could be got under way. B mill, of the Shelby Steel Tube Co., an identified interest at Ellwood City, Pa., was started at once and later A mill was put in operation. The Continental, Pennsylvania and National works were all closed except the open-hearth and Bessemer mills in the latter plant, but the Pennsylvania and the National works were started on Tuesday night. Continental is still idle for lack of coal. The Christy Park, Pa., works is on in full.

The American Sheet & Tin Plate Co. also closed all its sheet and tin mills at midnight on Thursday, but later exemptions came in for the tin mills that are working on direct Government orders for tin plate for containers for food products, and on Monday morning most of these mills were started, the others starting on Tuesday morning. The company also closed down its open-hearth furnaces at the Vandergrift, Pa., works, but these were started when the exemption order was received. All the sheet mills of the company remained closed until midnight of Tuesday except one small mill that is working on direct Government orders, and this mill started as soon as the exemption order was received.

The McKeesport Tin Plate Co. promptly closed its tin plate plant at McKeesport, Pa., having 44 tin mills, on Thursday night, but later this company was ex-

empted and this plant is on full this week, though with a very limited supply of steel and fuel.

All other large and small manufacturing plants in the Pittsburgh, Youngstown and Wheeling districts obeyed absolutely the letter and spirit of the shut-down order and promptly closed their plants and kept them closed until midnight of Tuesday unless they were exempted in the meantime.

Lack of Notice Criticised

Whether the shut-down will have accomplished, if only in part, its object of relieving the freight congestion and will result in some of the railroad embargoes being removed time alone will tell. Much of the criticism was over the fact that absolutely no notice was given by the Government that it intended to take this drastic step. The reply to this is that if the Government had given notice of the intended shut-down the railroads to Washington would have been jammed with manufacturers' committees going there to protest and that the feeling stirred up would have created a deplorable condition.

The thing to do now is to await the results of the order, and it is the wish of the steel trade and all manufacturers and merchants as well that the action of Fuel Administrator Garfield will result in relief from the serious railroad and fuel situation that has been a menace to all lines of business for many months.

The local fuel administrator, D. W. Kuhn, on Saturday made a number of rulings in regard to the order. Plants engaged in the manufacture of necessary parts of locomotives and the repair of locomotives may use heat, light and power any day of the week. Manufacturers of silica and other brick necessary for blast furnaces and open-hearth furnaces and for other uses in plants exempted from the order are exempted and may use fuel and power any day in the week.

The Duff Mfg. Co., Pittsburgh, manufacturer of lifting jacks necessary to the repair of locomotives and also drilling machinery, was exempted; also the Union Steel Casting Co., the Oil Well Supply Co. and Brown & Co., the latter operating the Wayne Iron & Steel Works and working on Government orders.

General Suspension in Northern Ohio

The Garfield closing down order resulted in the suspension of operations in practically all iron and steel mills and metal-working plants in Cleveland and northern Ohio. Blast furnaces were kept in operation as far as available supply of coke enabled them to do so. Three steel plants, those of the McKinney Steel Co. and the Riverside works of the Otis Steel Co., in Cleveland, and the Cromwell Steel Co., in Lorain, were kept in full operation, as they are making steel for the Government almost exclusively. The three Cleveland rolling mills were completely shut down.

The closing down order affected manufacturing plants, machine shops and foundries doing Government work almost exclusively, the same as it did plants having no direct or indirect Government orders, although there are very few Cleveland plants in the metal working field that are not doing some Government work. Manufacturers having Government orders kept the wires to Washington hot Friday with messages asking for exemptions from the closing order. Some of these were allowed, but more were not. The first plant authorized to resume operations was the Hydraulic Pressed Steel Co., which is filling large orders for shell forgings. This company started up its plant again Friday afternoon. The Forest City Machine & Forge Co., working exclusively on detonators, received authority allowing it to resume Saturday morning. The McMyler-Interstate Co., working almost entirely on gun

forgings and shells, was closed down tight. Wheels came to a standstill in various other plants making airplane motors and parts.

Foundry operations were entirely suspended in Cleveland, cutting off production in steel foundries that are working almost exclusively on castings for motor trucks for the Government, and the Westinghouse and other malleable and gray iron plants engaged largely on Government work.

Machinery manufacturers generally suspended operations, although most of them are making tools, cranes and other equipment for the Government, and many of their orders are urgent ones from the shipyards. The closing down order was strictly enforced by the local Fuel Administration and no plant was given permission to operate until it had secured the required exemption, either from Washington or Columbus. Machine tool builders in Cleveland received word from the Lincoln Motor Co., Detroit, indicating that the Government would permit machine tool builders making machines for the airplane industry to resume operations, but official authority did not reach them from Washington.

A modification of the Fuel Administrator's order permitted the Cleveland plants of the Reliance Electric & Engineering Co., making electric motors, and the Rubay Co., manufacturing automobile bodies, and the Mechanical Rubber Co., manufacturing gas masks, to

resume operations. Permission to start their plants up again without the five-day shutdown was also given Saturday to the B. F. Goodrich Co., the Goodyear Tire & Rubber Co., in Akron, making dirigibles and other army equipment; the Ohio Seamless Tube Co., Shelby; the Willys-Overland Co., Toledo, making airplane motors and gun carriages, and the W. H. Mullins Co., Salem, making automobile bodies.

In some plants, particularly where abnormally high wages are being paid, it is expected that the output will be curtailed very little, if any, by the shutdown. There is almost universal complaint among manufacturers in many industries that with present good wages many of their men refused to work full time, laying off a day or two per week if they can earn as much in four or five days as they did previously in working full time. When forced to be idle one day a week during the next few weeks, it is believed they will be inclined to stick to their jobs the remaining days and thus keep the output of the plant for each week close to normal.

Rolling Mills Idle

The American Steel & Wire Co. shut down its Cleveland rolling mill plants with the exception of some of the open-hearth furnaces at its Newburgh steel works, for which a supply of fuel oil is on hand. The blooming mill was shut down, the ingots being stored. The order had no effect upon the Cleveland blast furnaces of this company, as three were banked some time ago for lack of coke. The two remaining furnaces are being kept in blast.

The plant of the McKinney Steel Co. was affected to very small extent by the order, as it is running almost entirely upon Government steel. The only curtailment was the shutting down of one battery of coke ovens, comprising one-fourth of the coke oven equipment.

The Upson Nut Co., Cleveland, shut its plant down entirely Friday, with the exception of its blast furnace, but on receiving an exemption from Washington resumed on Monday operating its open-hearth furnaces and blooming mill, but not its finishing mill. Work was not resumed in its bolt and nut works until Wednesday.

Both the Lakeside and Riverside works of the Otis Steel Co., Cleveland, are shut down for lack of coal. The former suspended operations about a week ago, and the latter on Saturday. Both plants were given exemptions from the fuel order, as they are running almost exclusively on Government steel, but the exemptions were of no avail because of not having fuel.

The plant of the United Alloy Steel Corporation, Canton, Ohio, is entirely shut down with the exception of its two electric furnaces because of a lack of coal. Ten of its open-hearth furnaces stopped Jan. 13, and the remaining eight during the past week. Operations may not be resumed for several days, as the prospects of securing coal are not very bright. This plant was granted an exemption from the Fuel Administrator's order as it is working on Government steel almost exclusively.

The Central Steel Co., Massillon, had its plant almost entirely shut down Friday and Saturday, but on Monday resumed operating five of its nine open-hearth furnaces, having received definite instructions to continue to make steel for the Emergency Fleet Corporation and for aircraft parts. Sufficient rolling-mill capacity is being kept in operation to roll down all the ingots as they are produced.

The plant of the Cleveland Steel Co. shut down entirely for five days covered by the Fuel Administrator's order.

The Cleveland Furnace Co. did not shut down its two blast furnaces or by-product coke plant, the latter supplying gas for the city.

M. A. Hanna & Co. slowed down operations, but kept their blast furnaces running at Leetonia, Ohio; Detroit, Buffalo, and West Middlesex, Pa., but discontinued entirely shipping iron.

Pickands, Mather & Co. kept their blast furnaces in operation at Toledo, Ohio, and Erie, Pa., and also their coke plant in Toledo, which furnishes gas for the city. This firm also kept in operation the blast furnace of the United Furnace Co., at Canton, Ohio. It discontinued all shipments of pig iron.

The rolling mills of the Union Rolling Mill Co., the Empire Rolling Mill Co., and the Lake Erie Iron Co., Cleveland, were shut down entirely.

The Cromwell Steel Co., Cleveland, did not suspend operations in its steel plant at Lorain, Ohio. Its open hearth furnaces are fired by fuel oil.

Some Sharp Criticism

The Fuel Administrator's order compelling plant suspensions caused consternation among Cleveland manufacturers in the iron and steel industry and brought out a great deal of sharp criticism. While a few manufacturers felt that the office of the Fuel Administration was probably in possession of facts indicating that the situation is worse than generally realized, and was warranted in taking the drastic action, the general sentiment is that the order was entirely too far-reaching and that some other method could have been adopted to relieve the situation without paralyzing manufacturing industries.

The problem generally was regarded solely as one of transportation and one that could have been solved by getting greater efficiency on the part of the railroads in the handling of coal and without the shutting down of plants, particularly those engaged in the manufacture of essentials or doing work directly or indirectly for the Government. Most manufacturers felt that the wheels of industry as far as they were doing anything to help win the war should not have been stopped one moment, and many doubt whether the drastic order will result in much improvement in the coal situation. Some of the views of the Cleveland manufacturers on the subject are given below, many from a feeling of patriotism being unwilling to give public expression of opinions in criticism of the order:

H. A. Fuller, president of the Upson Nut Co., Cleveland:

I am very strongly opposed to the order, and I believe my views are shared by a large percentage of manufacturers. It certainly seems to be very unwise. I cannot see what net results the administration at Washington hopes to gain considering the great loss in wages and production. It means a serious loss to industries, and to the prosecution of the war. I cannot imagine anything that would be more cheering to the Germans or more depressing to our people.

Melvin Patterson, assistant general manager of the Brown Hoisting Machinery Co.:

The trouble is that the railroads cannot move coal, and something of this kind had to be done. The railroads were getting to a point where they would have blocked manufacturing plants anyhow if some drastic action had not been taken. After the roads are given five days to clean up, they should be able to handle the coal. However, I do not know that shutting down manufacturing plants one day a week for several weeks is going to help the situation much, as I believe many manufacturers will attempt to get out as much production in five days as they have been turning out in six days. If they do that, the one-day a week closing order will have no beneficial effect.

David J. Champion, president and general manager Champion Rivet Co.:

The order requiring the shutting down of industrial plants is a great national hardship and inconvenience, the outcome of which is problematical. What makes it more regrettable is that it was dictated by a man whose business training was not of that practical kind which inspires public confidence. We feel that such a drastic order should be the work of a national board of practical and patriotic business

men rather than the action of a single individual, no matter how competent or well-meaning he may be.

M. L. Hopkins, secretary of the Union Rolling Mill Co., Cleveland:

This order shutting down industrial plants is the worst thing that has happened. It would not have been so obnoxious had manufacturers been given some warning and time to prepare for it. It would not have been so bad had manufacturers been allowed to keep a small amount of power on for needed repair work during the shutdown. As it is, the time is totally lost. There cannot be much hope for the near future when they order the suspension of work one day a week for so far ahead.

D. T. Croxton, president Cleveland Furnace Co.:

They must see down in Washington that conditions are more serious than we appreciate out here. The chances are that they know what they are doing.

A. W. Henn, secretary-treasurer National Acme Co.:

My personal opinion is that the coal order was a rank mistake. I believe that the object they are striving for could have been accomplished in some other way.

George W. Booker, president F. B. Stearns Co.:

The Garfield shut-down order, in my opinion, is proof that the coal situation has been badly handled by somebody. I do not think the order was justified in any manner. It seems to me that the duty of the Fuel Administration was to get coal, and to clear up the railroad congestion and not to paralyze the industry of the country. I cannot see where any benefit will be derived from the order.

W. D. Sayle, president of the Cleveland Punch & Shear Works Co., and chairman of the Cleveland Fuel Committee:

The shutting down order is a brave attempt to get good results.

Department Exemptions Also Recognized

Exemptions from the Fuel Administrator's order permitting their plants to operate as far as they were engaged on Government work were received from Washington Saturday by a number of Cleveland companies, and these resumed operations either in whole or in part on Monday. These include the White Co., maker of motor trucks; the Mechanical Rubber Co., engaged in making gas-mask parts; American Multigraph Co., Warner & Swasey Co., McMyler-Interstate Co., Browning Co., and the Enterprise Tool Co. It is understood that these and other plants securing exemptions will be permitted to continue to operate their plants on Mondays during the ten-week closing period.

A ruling was given Sunday by W. D. Sayle, chairman of the Cleveland Coal Committee, that any plant having Government orders and securing an exemption from one of the Washington departments, could resume operations at once. This relieved the situation of some of the confusion due to the fact that exemptions from the Washington departments had not previously been recognized, it being necessary for a manufacturer to secure an exemption from the Fuel Administrator. A number of Cleveland manufacturers engaged on war work had secured exemptions from Washington departments during the day or two previous, and with the ruling of Commissioner Sayle they had authority to resume operations Monday, but few were able to do so before Tuesday, as they had not time to notify their men to return to work Monday. However, a few started up some of their departments Monday morning.

Plants Idle and Exempted in New England Centers

New England, although its coal supply and transportation facilities were both in worse condition than any other part of the country, uttered an almost unanimous protest when the order of the Fuel Administration for a five-day suspension of business was made known last Thursday. Organizations were hastily called together in many cities to discuss the situation. With singular unanimity two steps were taken at these meetings: A protest was wired to Washington and a vote of loyalty to the Administration with a pledge of obedience to the decree was passed.

Then the factory managers hurried back to their plants to lay plans for the ensuing five days. Those directly engaged in munitions work were at a loss to know whether the order applied to them, and in some cases did not obtain their exemption until Saturday. The payroll problem furnished a further complication in many cases, as Friday and Saturday were pay days. Most of the manufacturers who were compelled to close down decided not to pay their employees during the suspension of production, but some have planned to make up the loss of wages by overtime work in the next two months.

It is not possible to obtain a complete list of all the companies which have been authorized to continue production without interruption, but the situation in some of the leading industrial centers is outlined below.

Conditions in Connecticut

In Connecticut the first Garfield order declared that all the factories, including those working on munitions, would close for five days. Within the next 24 hrs., 11 factories had received notices of exemption and hour by hour the list has grown until the exceptions now number between 60 and 70. A similar condition prevails in the other States, but all the cases of exemption have not been made known publicly.

Bridgeport, one of the most important of the cities largely engaged in war work, was hard hit, and for some time there was great uncertainty in regard to the opening of small plants which were busy almost wholly on sub-contracts for direct war products. Even with the considerable list of factories appearing below, which were permitted to operate those departments engaged on war work, the number of workers idle in the city was about 40,000. The companies which were operating on the first day of suspension were the rifle and cartridge plants of the Remington Arms Union Metallic Cartridge Co., Bridgeport Brass Co. (tube department), Liberty Ordnance Co., Lake Torpedo Boat Co., American & British Mfg. Co. and the Locomobile Co. of America. In the succeeding days the following factories received permission to resume operations: Bullard Machine Tool Co., Bridgeport Metal Goods Co., Bilton Machine Tool Co., Baird Machine Co., Bridgeport Tool Works, Lindstrom Die, Tool & Gauge Co., Grant Mfg. & Machine Co., Max Ams Machine Co., Ashcroft Mfg. Co. and Consolidated Safety Valve Co.

In New Haven three plants were not closed: the Winchester Repeating Arms Co., 14,000 employees; the Marlin-Rockwell Corporation, 7000 employees, and the Trego Motors Co., 100 employees. The local compilation from which these figures was obtained showed 21,100 men and women at work and 18,442 idle. Among the larger metal working industries which were not exempted were the American Steel & Wire Co., 750 employees; Sargent & Co., 2900; New Haven Clock Co., 1900; Greist Mfg. Co., 750; Geometric Tool Co., 300; Acme Wire Co., 650; Eastern Machine Screw Co., 200; William Schollhorn Co., 160; Bigelow Boiler Co., 140; Hogson & Pettis Mfg. Co., 100, and H. G. Thompson & Son Co., 100.

Waterbury has few exempted factories. The ordnance department of the Scoville Mfg. Co., the tube mills

of the American Brass Co. and parts of the Chase Metal Works and the Chase Rolling Mills are the only plants operating. In Torrington the exempted plants are the Coe Brass branch of the American Brass Co. and the Hendey Mfg. Co. Other exempted plants, mostly for certain departments only, are the Carter & Hakes Mfg. Co., Winsted; New Departure Mfg. Co., Bristol; Rockwell-Drake division of the Marlin-Rockwell Corporation, Plainville; Connecticut Telephone & Electric Co., Meriden; Franklin Electric Co., Middletown, and United States Machine Gun Co., Norwich.

The New Britain Machine Co., 1159 employees, is the only factory in New Britain which has not been seriously affected by the closing order. This great hardware center has been one of the worst sufferers in New England.

The known exemptions in Hartford include the Colt's Patent Fire Arms Mfg. Co., 5300 employees; Pratt & Whitney Co., 3380; Hartford Machine Screw Co., 1200; Terry Steam Turbine Co., 300; Maxim Silencer Co., 240; Hartford Special Machinery Co., 150; Whitlock Coil Pipe Co., 100; Henry & Wright Mfg. Co., 25; McIntyre Machine Co., 12; S. K. F. Ball Bearing Co., 200; Henry Souther Corporation, 15, and Jewell Belting Co., 300. Some of the large plants closed down are: Underwood Typewriter Co., 4050; Royal Typewriter Co., 2000; Billings & Spencer Co., 1000; Whitney Mfg. Co., 700; Pratt & Cady Co., 600; Taylor & Fenn Co., 350, and Veeder Mfg. Co., 270. Most of the plants which are operating will be able to use only a portion of their regular working forces and it is estimated that the number idle will be in excess of 20,000. Mayor Hagarty of Hartford and a committee of manufacturers have undertaken the task of unloading on the first two days of this week about 1000 freight cars now in the Hartford freight yards. Under the direction of selected experts between 3000 and 4000 idle workers and more than 100 large motor trucks loaned by manufacturers will be engaged in the work.

Rhode Island reports about 134,000 employees affected by the Garfield order. About 25,000 of these are engaged in metal working plants. The number of idle in the state is apparently to be greatly decreased on account of the large number of exemptions being granted to textile plants. The metal working plants which resumed production in part include the Gorham Mfg. Co., Providence; Beaman & Smith Co., Providence; Potter & Johnston Machine Co., Pawtucket; Taft-Pierce Mfg. Co. and Woonsocket Machine & Press Co., Woonsocket; Langelier Mfg. Co., Providence; Herreshoff Mfg. Co., Bristol, and Gallaudet Aircraft Corporation, Warwick.

Conditions in Other Cities

MILWAUKEE, Jan. 21.—The order of the United States Fuel Administration ordering the discontinuance of manufacturing operations for five days came as much of a stunning blow. It is estimated that between 2300 and 2400 workshops, employing between 140,000 and 145,000 operatives, were idle during the period. Modifications of the order enabled a limited number of shops to resume operations during Friday, while others are enabled thereby to re-open to-day. The modifications thus far received and made public affected plants holding contracts on aviation and ordnance only, but these comprise a large proportion of the business of manufacturers of milling machines and other machine tools, as well as makers of airplane motive power.

The Allis-Chalmers Mfg. Co., which was the first to be included in a list of exemptions from the order, was practically at a standstill on Friday, as the late arrival of the exemption made it impossible to check off in time the men needed for the work specified there-

In Massachusetts

Only a comparatively few of the factories in Massachusetts were included in the original exemption list. The most important industry exempted was the Fore River Works of the Bethlehem Shipbuilding Co., Quincy. The big plants of the General Electric Co., Lynn, received an exemption on Government work, but owing to a misunderstanding was in full operation for a short time. About 7500 hands were laid off at these plants in obedience to the order. The B. F. Sturtevant Co., Hyde Park, Boston, has placed over 1000 of its force of men back at work after a short suspension of the entire plant.

In Worcester the American Steel & Wire Co. kept at work those departments making wire rope, and the Wyman-Gordon Co. and the Leland-Gifford Co. kept busy departments engaged on work for the Liberty motors. Later exemptions were received for the press shop and tool room of the Worcester Pressed Steel Co. and for the Osgood Bradley Car Co., working on gun carriages. The Norton Grinding Co. and the Heald Machine Co., grinding machines, and the Reed-Prentice Co., lathes, also received delayed exemption notices. Among the many idle plants were the Reed & Prince Mfg. Co., 800 employees; Graton & Knight Mfg. Co., 2900; Crompton & Knowles Loom Works, 1100; Whitcomb & Blaisdell Machine Co., 450; Norton Co., 2700; American Steel & Wire Co., 4500; Morgan Spring Co., 400.

The situation in Springfield was much the same as in Worcester, many of the larger plants being completely closed. The plants which operated for all or part of the closed period were the United States Armory, Smith & Wesson Co., Van Norman Machine Tool Co., New England Westinghouse Co., Springfield Aircraft Corporation and Torrington Needle Co.

The big works of the General Electric Co. at Pittsfield were not exempted, the only metal working plants operating being the Pittsfield Machine & Tool Co. and Robbins, Gamwell & Co. In Greenfield the several factories of the Greenfield Tap & Die Corporation were kept busy as they are run wholly on water power. Several other plants in the New England section were also permitted to run for the same reason, among them some of the other Greenfield plants. The Mason Machine Co., Taunton, was exempted as it is making gun carriages for the ordnance department. Meager reports from the three northern New England States indicate that virtually every industry in that region was closed, the notable exceptions being a few textile plants.

in. The same was true of the Filer & Stowell Co., Power & Mining Machinery Co. and Nordberg Mfg. Co. The Kearney & Trecker Co. and Kempsmith Mfg. Co., makers of milling machines, received advices on Saturday which enabled them to resume operations on Monday morning.

Shops not exempted in any way suspended operations entirely on Jan. 17 and will not resume until Wednesday morning. For a day or two a small force was engaged in making repairs and doing overhauling such as usually is done on Sundays. The Pawling & Harnischfeger Co., crane manufacturer, is among these concerns. At the Cutler-Hammer Mfg. Co., which is executing large contracts for electric controlling devices for the United States Navy, it was stated that the plant was entirely closed down and that no advices had been received up to Saturday afternoon which indicated that operations would be resumed before the end of the five-day period.

So far as can be ascertained, the suggestion of the

Fuel Administration that workmen be paid full or part time during the suspension of operations was not received with any degree of favor by the employers. According to William J. Fairbairn, secretary of the Milwaukee Metal Trades and Founders' Association, the fact must be borne in mind that the employers are as hard hit, if not more so, than the employees.

Quick Action at Cincinnati

CINCINNATI, Jan. 22.—Fuel Administrator Garfield's order came so suddenly that it required quick action on the part of local manufacturers to make arrangements for carrying it out. The order was carried out to the letter and with the exception of exempted plants not a wheel turned in any Cincinnati factory Friday and Saturday.

On Saturday morning, probably 90 per cent of the machine tool builders received instructions to resume operations Monday morning. These firms all were engaged on Government work, and the list embraces all the plants of the Oakley Colony. Several firms outside the metal working lines also received permission to start up Monday, included in which is the Perkins-Campbell Co., harness maker, and the Peters Cartridge Co. Some apprehension was felt on the part of manufacturers as to being able to get their men transported to the different factories, due to a curtailment proposed in the car service, but to-day it is understood that this difficulty has been overcome.

The Andrews Steel Co. and Newport Rolling Mill Co. have closed both of their plants in Newport, Ky., and will remain shut down until Wednesday. Although it was understood that their open-hearth furnaces could be operated, on account of a scanty supply of coal it was decided to observe the entire five-day period.

The American Rolling Mill Co., Middletown, Ohio, resumed operations Monday morning, having received a voluntary release order from Washington and instructions to continue producing material intended strictly for the Ordnance Department.

The Whitaker-Glessner Co., Portsmouth, Ohio, did not shut down its plant, having been given orders to continue on its war contracts.

The blast furnaces in southern Ohio have lately been operating intermittently on account of a coke shortage. While several of them are banked, it is not due to the Government's order, but to the scarcity of fuel. Among the last to temporarily suspend operations is the Union furnace of Rogers, Brown & Co. at Ironton, Ohio.

Makers of portable electric tools did not receive any exemption instructions, and will remain closed until Wednesday. An effort is being made by these manufacturers to have the ruling suspended on future Monday holidays, as their machines are nearly all intended either directly or indirectly, for Government use or for the Allies.

Mill supply firms are puzzled as to how to construe the order. The resumption of activities on the part of the machine tool builders necessitates the purchase of shop supplies that in some cases are badly needed. The general interpretation of the order is that emergency orders of this kind can be filled provided stores are not heated above 40 degrees, which is the regulation for office buildings.

All Cincinnati foundries are idle, and several of them welcomed the enforced shut-down, hoping that they may be able to renew their supplies of coke. None has been granted exemption orders, as far as is known.

Machine Tool Trade in Line

CINCINNATI, Jan. 21—(By Wire).—J. B. Doan, president American Tool Works Co., Cincinnati, who is president of the National Machine Tool Builders' Association, says: "Manufacturers realize that we are at war and understand fully that many hardships and inconveniences must be endured before a successful conclusion is reached. They also understand that with the information Washington officials have there must have been a good reason for issuing the Monday holiday order. It is reported, and doubtless true, that some manufacturers will suffer from the disrupting of their labor organization to some extent, but no attempt is made to evade the order in any way. Shops having a small percentage of commercial work, which have received release orders for Government work, have had some difficulty making the division, especially where a number of small parts were concerned. We sincerely hope that the press dispatches are correct in predicting that the order will not have to be enforced during the entire ten weeks' period."

The American Rolling Mill Co., Middletown, Ohio, is running about three-quarters full, strictly on Government work. The Whittaker-Glessner Co., Portsmouth, did not close down. The Ashland Steel Co., Ashland, Ky., and the Andrews Steel Co., Newport Rolling Mill Co., Newport, Ky., were all closed tight until Wednesday morning. The Pollak Steel Co., Cincinnati, received a release order, but decided to remain closed until Wednesday.

Many Plants Active at Buffalo

BUFFALO, Jan. 22.—Blast furnaces in this district all are running to the full extent that their coke supply permits, not being affected by the fuel order. The Lackawanna Steel Co. has seven stacks, Rogers-Brown Iron Co., four; Buffalo Union Furnace Co., three; Wickwire Steel Co., two; Donner Steel Co., two, and one is in at North Tonawanda. The other Tonawanda stack is out for relining. Steel plants operating open hearths are Wickwire, full; Lackawanna, 50 per cent; Donner, six running, four out for repairs. The Wickwire Steel Co. is running rod and wire mills, which are operated by producer gas from Semet-Solvay Coke Co. plant. Other Wickwire mills are closed on account of the fuel order. The Lackawanna Steel Co. is running its plate mill full on Government work, its rail mill on shell steel and other mills at 50 per cent capacity on account of the fuel order. The Donner Steel Co. is running its plate mill on Government work for the Emergency Fleet; other Donner mills on blooms, billets, etc., are operating about 55 per cent capacity, being hampered by delay in coke shipments.

Mobilizing Men and Trucks from Idle Plants

One of the constructive criticisms telegraphed to Washington was the following, sent to the Fuel Administrator by M. Charles Schweinert, treasurer and manager A. Schrader's Son, Inc., manufacturer of brass fittings and rubber goods, Brooklyn, N. Y.:

"This is not criticism, but simply a suggestion which I hope may help in the present emergency. Instead of making the workers of the country idle for a certain number of days would it not be better to mobilize them for emergency work in this crisis? For instance, for every plant which will shut down through the issuing of your order there are a number of men who could do work at moving coal and loading and unloading the freight cars."

He then took up the specific application of the suggestion to the New York problems, indicating the mobilizing of motor trucks. Continuing, he telegraphed: "Strong men, accustomed to, or fitted for, outdoor work could be put to work at unloading freight, and I am sure that each concern in Greater New York and the rest of the country affected by the shut-down would be willing to contribute whatever number of men and trucks that are fit for this work, and pay them

their regular wages if through such an arrangement the operation of their plants would not be interrupted but would be permitted to run with such a force as is left. I think this plan should recommend itself to you if for no other reason than that it will save the working people the wages which they will lose through the shut-down. This would cause unthinkable suffering. Besides, at this time we should not create idleness but rather use our labor in such a way as to speed up the prosecution of the war. We should follow the example of France at the Marne, and under an extraordinary condition do something extraordinary. France by using means unthought of before to move her soldiers stopped the German advance. We should try in this crisis by unusual and unthought of efforts to relieve matters and not sit down and rest in idleness. Our concern offers four motor trucks, 30 men, two men for engine room work on ferry boats, and I personally am willing to serve in any capacity should you desire my services."

General Operation in Birmingham District

BIRMINGHAM, ALA., Jan. 23. (By Wire).—Under the claim of being exempt, managers of blast furnaces and steel plants in this district did not cease operations under the order of the Fuel Administration. However, the Gadsden steel mill of the Gulf States Steel Co. has been short of fuel for more than a week and has been running slack in steel-making departments. The steel plant of the Tennessee Coal, Iron & Railroad Co. has been on in full. Machine shops in this district have been in operation from 6 a. m. to 4 p. m. through special permission and by the use of hydro-electric power. Iron and steel production in Alabama for the month will show a considerable falling off.

Steel Corporation Not to Pay Wages for Days of Shut-Down

A meeting of the finance committee of the United States Steel Corporation was held on Thursday, Jan. 17, in view of the recommendation in the order of Fuel Administrator Garfield that employers pay wages for the days of industrial shut-downs. Chairman Gary made the following statement after the meeting:

"We shall probably not pay the wages of our men when they are not actually employed. To do so would be contrary to the custom of the trade and would establish a precedent that would eventually be unfair to employer and employee."

Permanent Machinery Exhibit in New York

A Machinery Sales Department of the Grand Central Palace, Lexington Avenue and Forty-sixth Street, New York, similar to that which has been maintained for some years in The Bourse, Philadelphia, will be opened in May. It will be a permanent institution, covering one entire floor of the building, containing about 47,000 sq. ft. of space, which will be split up into sections of 10 x 12 ft. and larger. An effort will be made to encourage out-of-town buyers and export agents to visit the Machinery Sales Department on their trips to New York. J. H. Brady is in charge of the arrangements for the exhibit.

With a view of co-ordinating engineering organizations in Ohio, a conference will be held at Brown Hall, Ohio State University, Columbus, Jan. 29, with Prof. Clyde T. Morris of the Ohio State University as chairman. This meeting immediately precedes the annual meeting of the Ohio Engineering Society, which will be held at the same place Jan. 30, 31 and Feb. 1.

The Thomas Wrigley Co., special machinery builder, has removed to 504 South Sherman Street, Chicago, where a new and up-to-date plant has just been completed. The company was in its former location for 20 years.

IMPROVING THE RAILROADS

Secretary McAdoo Appears Before Committee—Hopes for Early Ending of Garfield Order

WASHINGTON, Jan. 22.—That from a billion to a billion and a half dollars will be required to be invested by the Government to put the railroads in a state of efficiency and keep them in that condition in order to meet the vital needs of the war, is the important declaration made to the Senate Committee on Interstate Commerce by Director General McAdoo in the course of an extended hearing accorded him yesterday. He also foreshadowed a long period of Government control, although expressing his opposition to Government ownership. Incidentally, he intimated that the Garfield fuel order may be rescinded by the middle of February as a result of improved conditions.

Emphasizing his opinion that hasty and ill-considered legislation would be ruinous to the holders of railroad securities when the Government should relinquish control of the lines, Mr. McAdoo urged the committee to provide in the pending bill that Government control shall not cease with the end of the war or within one year thereafter, but shall continue until Congress shall otherwise order. This declaration brought from Senator Watson of Indiana a direct question as to whether the Secretary believed in Government ownership, to which he replied:

"I do not; but I believe it will be impossible to return to competitive conditions as they were before the Government stepped in. There will have to be a greater measure of Government control and regulation henceforth than we have had in the past. If you now limit the period of federal control, you may make impossible new legislation to meet situations that may arise. We must use our best foresight. To throw the roads back to private control with competition destroyed and with one line carrying business at the expense of another would be a grave mistake."

Replying to a question by Senator Kellogg as to whether the power to fix rates should be taken from the Interstate Commerce Commission and the various state commissions and lodged with the President during the period of Government control, Mr. McAdoo said that while the President was operating the railroads he thought it extremely unwise to hamper him in any way, either by withholding the power to fix rates or in any other way.

"That means, then," commented Senator Kellogg, "that the rate fixing during the war and thereafter until Congress acts should be up to one man?"

"He should have the power," replied Mr. McAdoo. "He may not use it. The President has a great many powers he does not exercise."

"I have not heard of any he has not exercised," retorted Senator Kellogg.

Replying to a question as to how long, in his opinion, it will be necessary for the Government to retain control of the railroads, Mr. McAdoo said:

"That all depends on the length of the war. If it lasts six months or a year, the period required to liquidate the roads' affairs and turn them back will be comparatively short. But if it lasts three to five years, the period of liquidation naturally will be longer. No one can say definitely when the war will end, and that is why Congress should not put a hard and fast limit on the period of Government control."

Mr. McAdoo strongly urged the committee not to abandon the three-year compensation basis suggested by the President as a guarantee to owners of railroad securities. This basis, he said, was fair and reasonable.

Mr. McAdoo testified that he had no hand in the preparation of the Garfield fuel order, though he approved it in principle. He also expressed the hope that it may not be necessary to continue the heatless Mondays beyond Feb. 15.

The Provident Engineering Co., 719 Commercial Trust Building, Philadelphia, has been incorporated with R. B. Fritch as president, and will handle special machinery, machine tools, new and used.

Machinery Markets and News of the Works

EXPANSION IN SHIPYARDS

Companies in Market for New Equipment

Activity on Both Atlantic and Pacific Coasts— Munitions Contractors Also Buy

Increasing activity in the development of shipbuilding plants on both the Atlantic and Pacific coasts promises considerable new business for the machinery trade during the next few weeks. The Atlantic Corporation, Portsmouth, N. H., which has a contract from the United States Shipping Board for 10 steel vessels, is enlarging its plant and, it is reported, will spend about \$1,000,000 for new equipment. About \$50,000 worth of machinery orders were placed last week. The United States Steamship Co., which owns the plants of the Groton Iron Works at Groton and Noank, Conn., has organized the Virginia Shipbuilding Corporation, Alexandria, Va., which has a contract for 12 steel ships from the Government. Lists of new equipment to be bought are now being made up by the engineers of the Groton Iron Works.

On the Pacific coast there has been activity in the machinery trade, due to the requirements of shipbuilders whose plants are being expanded. The Moore Shipbuilding Co., formerly the Moore & Scott Iron Works, Oakland, Cal., has received a contract to build 16 additional steel freighters, making 32 in all that this company has contracted for. The shipyard now has six shipways and two more will be built. The Union Iron Works, San Francisco, has received a contract for steel freighters and has been authorized by the Shipping Board to add four more slips at their Alameda plant, and will give employment to 6000 additional men.

The Government continues to place contracts for munitions, and this has stimulated a very good demand for small lots of machine tools. The Crucible Steel Co. of America, Pittsburgh, was the sole bidder on 30,000 6-in. common projectiles. The John Thomson Press Co., New York, a printing press manufacturer, has inquired in the New York market for machine tools for work on shells. The Neptune Meter Co., Long Island City, N. Y., is reported to have a fuse contract. The Bartlett & Hayward Co., Baltimore, and the Worthington Pump & Machinery Corporation, Hazelton, Pa., have placed additional orders for tools for munitions work. The Zenith Carbureter Co., Detroit, has placed orders for about 20 machines in Cleveland. Demand for automatic screw machines has much improved as a result of the many Government contracts for fuses and other small parts.

The Marlin-Rockwell Corporation, New Haven, Conn., has under way the erection of a large factory and is reported to have plans for other buildings. Its expenditures for plants and equipment will total \$3,000,000.

Machinery companies quite generally closed their plants during the five-day holiday ordered by the Fuel Administration, and, unless exempted, will prepare to shut down on all Mondays up to March 25, as ordered.

New York

NEW YORK, Jan. 22.

Shipbuilding activity promises to be reflected shortly in considerable buying of new equipment. The Atlantic Corporation, Portsmouth, N. H., has purchased several machines for a plate and angle shop and its total purchases, it is said in the trade, will be about \$1,000,000. The Groton Iron Works, which has a plant for steel ships at Groton, Conn., and a yard for wooden ships at Noank, Conn., will build and equip a new shipyard at Alexandria, Va., and lists of the equipment to be purchased are now being made up. Tentative inquiries have been made in this market. The Federal Shipbuilding Co. closed last week for about \$100,000 worth of tools taken from the plant of the Stewart-Warner Speedometer Co., Long Island City, and also bought 11 traveling cranes.

General business has shown a gradual improvement since the first of the year, at which time it had reached the minimum for many months. The Government is placing additional orders for munitions. The Neptune Meter Co., Long Island City, is reported to have taken a fuse contract and has bought a few machines. The John Thomson Press Co., New York, has issued tentative inquiries for new equipment of tools for a prospective shell contract. The Bartlett & Hayward Co., Baltimore, and the Worthington Pump & Machinery Corporation, Hazelton, Pa., have each bought about 10 additional tools for munitions work.

The largest list of new tools offered for sale in this market for some time has been partially disposed of by Carpenter & Woodward, dealers in machinery, Woolworth Building. This firm took over the entire equipment of the plant of the Stewart-Warner Speedometer Co., Long Island City, with the exception of some tools commandeered by the Government, which purchased the plant for making gas masks. The equipment was worth about \$500,000 at present market values. The Federal Shipbuilding Co., Newark, purchased about \$100,000 worth of the largest tools.

The Air Nitrates Co., New York, which is building the Government plant for atmospheric fixation of nitrogen at Muscle Shoals, Ala., has purchased four 20-ton and seven 5-ton traveling cranes and four 6-ton transfer cranes. The Shepard Electric Crane & Hoist Co. received a considerable share of the allotment. The Federal Shipbuilding Co., Newark, awarded contracts for 11 traveling shop cranes, the Erie Steel Construction Co. and the Milwaukee Electric Crane & Mfg. Co. receiving the bulk of the business. The National Biscuit Co. has purchased complete Shepard coal-conveying equipment for a new power house being built in Pittsburgh. The Government is asking for bids on 25 one-ton triplex chain hoists for the American Ordnance Base Depot in France.

The Sea-Gold Improvement Co., Brooklyn, recently incorporated to manufacture airplanes, has acquired property, 1000 x 2000 ft., extending from Cropsey Avenue to Gravesend Bay, between Twenty-first and Twenty-sixth streets, along the waterfront, Brooklyn. H. O. Dobson, M. O. and R. Hall, 7822 Twelfth Avenue, Brooklyn, are the incorporators.

The National Wire Die Co., New York, has been incorporated by H. A. Villareth, W. and T. H. Quigley, 156 Manhattan Avenue, with a capital of \$10,000.

The Sun-Light Arc Co., New York, has been incorporated with a capital of \$300,000 to manufacture arc lamps. M. M. Eisenberg and E. M. James, 2 Rector Street, and A. C. Head, 181 Martense Street, Brooklyn, are the incorporators.

The Plaza Metal Bed Co., Brooklyn, has been incorporated by B. Schumer and H. Watinsky, 256 Maujer Street, Brooklyn, and others with a capital of \$7,000 to manufacture metal bedsteads, etc.

The R. L. Kenyon Co., 44 East Twenty-third Street, New York, manufacturer of portable houses, has increased its capital from \$10,000 to \$75,000.

The Margaret Ship Co., Inc., New York, has been incorporated with a capital of \$400,000 to operate a shipbuilding plant. E. T. Wrack and J. E. Downes, 17 Battery Place, and A. Begg, 32 Broadway, are the incorporators.

The Automatic Machine & Tool Co., 182 Centre Street, New York, has increased its capital from \$10,000 to \$25,000.

Ernest Westphal & Co., Inc., New York, have been incorporated with a capital of \$50,000 by Ernest Westphal, S. C. Congdon and L. A. Hunt, 26 Beaver Street, to manufacture metal products.

The American Motor Ship Co. and the American Motor Schooner Co., New York, have been incorporated as separate organizations with capital of \$1,170,000 and \$954,000 respectively by R. J. M. Bullowa, E. T. Wrack and H. L. Starr, 32 Broadway.

David H. Smith, Inc., 151 Fifty-first Street, Brooklyn, maker of iron and steel specialties, has filed articles of incorporation as David H. Smith & Son, with a capital of \$100,000. Construction of a new one-story building, 23 x 100 ft., on Fifty-first Street, near Second Avenue, to cost about \$10,000, has been started for the company.

The National Bridge Works, Review Avenue, Long Island City, N. Y., manufacturer of structural steel and ironwork, has increased its capital from \$300,000 to \$525,000.

The Aero Mfg. & Accessories Co., Brooklyn, has been incorporated with a capital of \$10,000 by R. Sidel and C. D. Brandt, 18 Dunham Place, to manufacture airplanes and parts.

Fire Jan. 14 caused a loss of about \$500,000 at 387 West Broadway, New York, divided among the occupants of the building as follows: The Universal Metal Spinning & Stamping Co., the Solar Light Co., the New York Gas & Electric Appliance Co., the Corrugated Paper Box Co. and the Gem Toy Co.

The Inventions Board, Inc., New York, has been incorporated with a nominal capital of \$5,000 by P. D. Strogoff, O. B. and M. Wren, 5 Nassau Street, to manufacture wireless equipment.

The D-B-L Products Corporation, New York, has been incorporated with a capital of \$150,000 to manufacture celluloid products. C. H. Louis, 1 West Eighty-first Street; I. L. Ernst, 151 West Eighty-sixth Street, and A. W. Burke, 401 East Seventeenth Street, Brooklyn, are the incorporators.

The Consumers' Tire & Rubber Co., New York, has been incorporated with a capital of \$100,000 to manufacture tires and rubber goods. E. D. Reecks, N. M. Blackley and A. R. Aboud, 275 Eighty-sixth Street, Brooklyn, are the incorporators.

The Mills Machine & Tool Works, Brooklyn, has been incorporated with a capital of \$50,000 by J. Mucher, J. C. Danzillo and R. S. Mills, 256 Monroe Street, Brooklyn.

The Parker Supply Co., 785 East 135th Street, New York operated in conjunction with the Parker Sheet Metal Works, has recently been reorganized with a capital of \$3,000,000. It has installed new machinery to increase its capacity for manufacturing expansion bolts, sash chains, metal screws, etc. H. Rosenberg is president.

The Color Motion Pictures Corporation, New York, has been incorporated in Delaware, with capital of \$500,000, to manufacture motion picture machines and parts. The incorporators are G. V. Reilly, S. B. Howard and A. W. Britton, 65 Cedar Street.

The Hillard Mfg. Co., Johnson Avenue, Tottenville, Staten Island, manufacturer of fine tools and machinery, has acquired a portion of the plastering department of the Atlantic Terra Cotta Co., to be used as an extension to its works. The company has been engaged on Government work and is said to have received additional orders. Frederick Hillard is president.

The American Car & Foundry Export Co., 165 Broadway, New York, has filed notice of increase in capital from \$500,000 to \$3,500,000.

Stephen Ransom, operating a marine repair works at 401 West Street, New York, has acquired property, 21 x 87 ft., adjoining his new four-story boiler shop, 64 x 81 ft., now in course of construction. On the site just purchased a five-story plant extension will be erected.

The Central Rubber Co., Nyack, N. Y., has been incorporated with a capital of \$200,000 by C. Cobb, P. Leggett and C. A. Winter, 54 East 129th Street, New York.

George H. Thatcher & Co., Leonard Street, Albany, manufacturers of iron castings, etc., are considering the erection of a machine shop to replace their building recently destroyed by fire.

The Trescott Co., Fairport, N. Y., has been incorporated with a capital of \$100,000 to manufacture agricultural machinery. W. A. and E. L. Trescott and A. N. Leclair are the incorporators.

The Wright-Martin Aircraft Corporation, New Brunswick, N. J., is making extensions to increase its production from 10 Hispano-Suiza motors per day to 20. H. M. Crane is chief engineer. Headquarters are at 60 Broadway, New York.

The Uneedus Mercantile Corporation, New York, has been incorporated with a capital of \$30,000 to manufacture telephone apparatus. H. J. Lucke and S. M. Baeder, 2 Rector Street, are the incorporators.

The Doehler Die Casting Co., Ninth and Court streets, Brooklyn, manufacturer of die castings and automobile bearings, has taken out a permit for alterations and improvements in its four-story factory.

The Baylis Co., Locust Avenue, Bloomfield, N. J., manufacturer of electrical appliances, is erecting an addition to its plant.

Joseph Kosteckney, 216-8 Bloomfield Avenue, Hoboken, N. J., will build a two-story addition, 20 x 65 ft., to his woodworking plant, to cost \$8,000. Contract has been awarded.

The Marconi Wireless Telegraph Co., Woolworth Building, New York has awarded contract for an additional one-story building, 145 x 230 ft., to its works at Aldine, N. J.

The Thomas Spark Plug Co., Roselle, N. J., recently organized, is planning the erection of a reinforced-concrete plant at Filbert Street and Colfax Avenue, reported to give employment to 100 men. Nelson A. Miller is president.

The Bryvory Corporation, Bloomfield, N. J., has been incorporated with a capital of \$50,000 by A. H. Bryant, Glen Ridge; S. Brent Girdler, East Orange, and Edward Dillon, Newark, to manufacture safety razors.

The National Musical String Co., New Brunswick, N. J., is reported to be considering the establishment of a branch factory at Hightstown, N. J.

The General Maxaphone Co., Union Hill, N. J., has been incorporated with a capital of \$500,000 to manufacture a machine to be known as the maxaphone. William Walser, West New York, N. J.; Henry T. Crapo, Boston, Mass.; Willis A. Farnsworth, Winthrop, Mass., and James H. McClellan, Brookline, Mass., are the incorporators.

The Autographic Register Co., Tenth Street, Hoboken, N. J., manufacturer of autographic register machines, has filed plans for a two-story addition to cost \$8,000.

To provide for the construction of a municipal electric power plant at Jersey City a bill has been introduced at the current session of the State Legislature, covering authority to issue \$150,000 in bonds. The station would be erected by the Board of Hudson County Boulevard Commissioners.

The New York Iron Roofing & Corrugating Co., 94 First Street, Jersey City, manufacturer of metal ceilings, cornices, etc., has acquired a factory at First and Washington streets, to be used in connection with its works.

The Ajax Electric Co., Jersey City, has been incorporated with a capital of \$100,000 to manufacture electrical machinery. W. C. Banks, H. Shippen and D. C. Roberts, all of Hoboken, are the incorporators.

The Everlasting Valve Co., Westside Avenue, Jersey City, has purchased a site on Third Street for an extension.

M. H. Donovan & Co., Irvington, Newark, have been incorporated with a capital of \$100,000 to manufacture skylights and kindred metal specialties. M. H. Donovan and H. H. Habicht are the incorporators.

The Novelty Brass Works, Newark, has organized to operate a plant at 46-48 Oliver Street for the manufacture of brass novelties. George Haurey, 62 Avon Place, Newark heads the company.

The Russ & Krekel Co., 97 Beekman Street, New York, manufacturer of stoves, furnaces, etc., has leased a five-story and basement factory at 184 Mulberry Street, Newark, as a branch works. T. H. Krekel is president.

The Hanley Rubber & Tire Co., Newark, has been incorporated with a capital of \$50,000 to manufacture tires and rubber specialties. D. M. Hanley, Bradley Beach, N. J.; Mathews J. Ready, South Orange, and Morris Hoffman, Newark, are the incorporators.

Angell del Castillo, Antofagasta, Chile, South America desires to receive quotations for a bench lathe with the following specifications: "Hollow head stock shaft, interior diameter 2 1/16 in. for cutting threads up to 4 1/2 in. Counter-shaft accessories, one 6-in. universal plate and another 12-in. with clamping file." Quotations, if possible, should be c.l.f. Antofagasta. Mr. del Castillo mentions the Banco Espanol de Chile as reference.

The Hoisting Engine Sales Company, Grand Central Terminal, New York, formerly owned by William B. Cist, has been incorporated, and the following officers have been elected: William B. Cist, president; Archer Armstrong, vice-president and general manager; H. Haaman, secretary and treasurer.

The Miller-Ulrich Machine & Tool Works, Inc., maker of tools and dies, 1512 Jefferson Street, Buffalo, has installed nine engine lathes, one turret lathe, one No. 2 universal milling machine, one 20-in. shaper, grinders, chills, etc., in its new machine shop. Charles Ulrich is secretary and treasurer.

The Utica Steam & Mohawk Valley Cotton Mills, Utica, N. Y., has let contract for a one-story boiler house addition, 31 x 73 ft.

The Geo. H. Thatcher Co., Albany, N. Y., is having plans drawn for rebuilding its machine shop on South Broadway, between Leonard and Pleasant streets.

The Yonkers Woodworking Co., Yonkers, N. Y., has completed plans for an addition to its factory on Tibbets Road

The Ransom-Leach Co., New York, has been incorporated in Delaware with a capital of \$100,000 to manufacture concrete-mixing and road-paving machinery. G. V. Reilly, S. B. Howard and A. W. Britton, 65 Cedar Street, New York, are the incorporators.

The Continental Can Co., Inc., 616 West Forty-third Street, New York, has filed notice of increase in its capital from \$10,000,000 to \$15,000,000.

Lehentaler Brothers, Stony Creek, N. Y., have filed articles of incorporation with a capital of \$25,000 to operate a sawmill and general wood-working plant. A. N. Lehentaler, H. P. and W. A. Gardner, Amsterdam, are the incorporators.

Buffalo

BUFFALO, Jan. 21

The Frazer & Jones Co., 351 West Fayette Street, Syracuse, N. Y., operating a malleable iron foundry on Milton Avenue, is considering the erection of a one-story addition.

The Globe Malleable Iron & Steel Co., 100-116 Greenway Avenue, Syracuse, is planning for increased output to handle a Government order said to total \$1,000,000. The company will operate its works under day and night shifts, and is stated to be arranging for about 100 men in addition to its present force of 400. Willard C. Lipe is president.

The Truman Cole Mercantile Co., Inc., Little Falls, N. Y., has been incorporated with a capital of \$50,000 to manufacture agricultural implements. Truman Cole, 532 Albany Street; A. M. Keller and J. Garlock, Little Falls, are the incorporators.

The Fli-Bac Screen Corporation, Rochester, N. Y., has been incorporated with a capital of \$750,000 by J. S. Le Pard, 485 Plymouth Avenue; A. J. Borger, 31 Elton Crescent, and M. N. Wethey, 48 Savannah Street.

The Buffalo Weaving & Belting Co., 215 Chandler Street, Buffalo, has increased its capital from \$750,000 to \$1,750,000.

The R. Ivey Machine Works, 160 Ellicott Street, Buffalo, has filed articles of incorporation under the name of the R. Ivey Co., with a capital of \$35,000, to operate a general machine shop.

The Evanwood Battery Corporation, Buffalo, has been incorporated with a capital of \$500,000 to manufacture electric batteries. H. J. Wood, R. H. Templeton and H. E. Evans, Buffalo, are the incorporators.

The Niagara Insul-Bake Specialty Co., Niagara Falls, maker of insulating appliances, has increased its capital from \$10,000 to \$50,000.

The Hessco Electrical Mfg. Co., Toronto, Ont., has closed negotiations with the Batavia Switchboard Co., Batavia, N. Y., for the manufacture of its electrical specialties for the United States. A. M. Orben is president of the Hessco company; the Batavia branch will be in charge of E. G. Chatte.

The Dairy Appliance Corporation, Ogdensburg, N. Y., has been incorporated with a capital of \$10,000 by W. and G. A. Wilson and E. M. Hall, Watertown, to manufacture dairy machinery.

J. H. Williams & Co., Buffalo, manufacturers of drop forgings, have let contract to the Trussed Concrete Steel Co., Buffalo, for erection of a small addition to its plant at Vulcan and Kenmore avenues and the New York Central Railroad

The Automatic Transportation Co., Buffalo, W. G. Carr, president, is completing a two-story addition, 54 x 165 ft., to its machine shop at Main Street and the Erie Railroad, at a cost of \$45,000.

The Curtiss Aeroplane & Motor Corporation, Buffalo, has completed plans for an additional one-story factory building at its new plant on Elmwood Avenue and the Lackawanna Railroad.

The tempering department of the Excelsior Steel Ball Co., Military Road, Buffalo, recently damaged by fire, is to be reconstructed at once.

The General Drop Forge Company, Buffalo, has been reincorporated to take over and carry on the business of the former General Drop Forge Co., which was sometime ago merged with the Federal Forge Company and went out of business. The same interests and management operating the former company remains in control. The company's plant is at Elmwood Avenue and the Erie Railroad.

Contract has been awarded by the Taylor Instrument Co., manufacturer of thermometers, Rochester, N. Y., for a three-story addition, 25 x 95 ft., to its factory on Ames Street.

New England

BOSTON, Jan. 21

A noticeable lull in orders for machine tools has been the most marked characteristic of the first three weeks of the new year. Some direct Government business is being placed, but local industries are doing little purchasing. A fairly large number of new industries are reported, but none of them are large and few result in prompt orders.

The Fuel Administration's order for the five-day stoppage of production has been generally observed by all the plants not exempted, although there has been a general protest. As most of the New England manufacturing plants were working at top capacity, the feeling is general that the loss of production will not be made up. Some of the plants affected are planning to run overtime to make up for the one day to be lost in the following weeks, but this movement is not general. As this section was extensively engaged in munitions work, the number of employees not affected by the order is probably greater than in any other part of the country. The receipt of more anthracite coal for domestic use will remove a source of worry to many employers, as factory workers were growing very restless over the lack of coal for heating and cooking purposes.

But little new building is going on or projected outside of a few large jobs in course of construction as a part of the war preparation program. The Marlin-Rockwell Corporation, New Haven, Conn., has under way the largest new project of this kind. The large groups of workers laid off at Springfield, Bridgeport and Meriden on account of the cessation of work on Russian rifle contracts are being absorbed with some speed by other munitions plants, but a large number are still without employment. The shortage of skilled labor is hampering many machine-tool and munitions factories. The ever-present transportation congestion has shut off the supply of steel and other raw materials to the point where a few small concerns have been compelled to shutdown temporarily and some large plants are close to exhaustion on raw material stocks. One large wire mill has 63 carloads of steel rods in transit from the Central West to New England, some of which have been on the road since early in November.

The Marlin-Rockwell Corporation, New Haven, Conn., which has already begun the erection of one large factory, is reported to have plans for other buildings which will bring the total investment in new buildings and equipment to \$3,000,000. It has large Government munitions contracts.

The Acme Wire Co., New Haven, has filed a certificate of the issue of additional shares of stock to the amount of \$487,875, making the total outstanding stock \$1,000,000.

The Colt Patent Fire Arms Mfg. Co., Hartford, Conn., has laid off about 800 hands at its Meriden, Conn., plant on account of the preparations being made to change from the manufacture of Russian rifles to Browning machine guns.

Harvey Hubbell, Inc., Bridgeport, Conn., has increased its capital stock \$300,000.

The Wright Wire Co., Worcester, Mass., is building a gas producer house at its Palmer, Mass., plant.

The Stenman Electric Valve Grinding Co., Worcester, Mass., has been incorporated with authorized capital stock of \$50,000. B. F. Stenman is president and Albert W. Larson, 10 Conway Street, treasurer.

The Mattatuck Mfg. Co., Waterbury, Conn., is to build a one-story boiler house.

The Union Hardware Co., Torrington, Conn., has laid off 200 employees who have been engaged in making ice and roller skates. The company is now making aeroplane parts.

The Chair-Town Mfg. Co., Gardner, Mass., has been incorporated with authorized capital stock of \$25,000, to operate a foundry and machine shop. W. P. Shuffletton is president and Frank M. Favor, treasurer.

The E. T. Ryan Iron Works, Inc., has been incorporated with authorized capital stock of \$10,000. Guy L. Harden is president and Adolf A. Lederhaas, 332 Allston Street, Cambridge, treasurer.

The J. Duncan Co., light iron workers, 7 Fulton Place, Boston, has awarded a contract for a factory, 50 x 110 ft. and 40 x 65 ft., one story, in Everett, Mass.

The Heath Grate Bar Co., Boston, has been incorporated with authorized capital stock of \$10,000. D. W. Allen is president and E. Roy Blaisdell, Watertown, treasurer.

The Mead-Morrison Mfg. Co., Gloucester, Mass., is to build an addition, 24 x 240 ft. Two large hydraulic presses will be installed.

Philadelphia

PHILADELPHIA, Jan. 21.

Henry Disston & Sons, Inc., Milnor Street, Tacony, Philadelphia, has awarded contract for a one-story extension, 50 x 131 ft., to cost \$7,000.

The International Match Co., Philadelphia, has sold its factory at Wharton and Taylor streets, consisting of property, 185 x 369 ft., to John A. Lafore. The structure has an assessed valuation of \$150,000.

The Government has awarded contract for a one-story ammunition shop, 24 x 200 ft., and a one-story ammunition loading shop, 24 x 40 ft., at the Frankford Arsenal.

The Alliance Shipbuilding Corporation, Philadelphia, has been incorporated in Delaware with a capital of \$5,500,000. It is said that its yards will be located on the Delaware River at Philadelphia or Camden. F. R. Hansell, Philadelphia; S. Vernon Pimm and S. C. Seymour, Camden, are the incorporators.

F. A. Ashman & Son, 2300 East Tioga Street, Philadelphia, manufacturers of iron and steel forgings, have awarded a contract for alterations and improvements to cost \$6,200.

George W. Smith & Co., Philadelphia, have awarded contract for a one-story wood-working plant, 85 x 275 ft., at Forty-ninth Street and Botanic Avenue.

The Standard Roller Bearing Co., 5001 Lancaster Avenue, Philadelphia, has filed plans for improvements in its plants to cost \$10,000.

C. V. Roberts, Sixth and Darby streets, Philadelphia, has commenced the erection of a one-story addition to his machine shop, 46 x 90 ft., at Church and Lackawanna streets, to cost \$10,000.

Property consisting of four large mills and tract of five acres along the Reading Railway, Conshohocken, Pa., has been purchased by the Ford & Kendig Co., 27 North Seventh Street, Philadelphia, manufacturer of pipes, tubing, etc.

The Tioga Steel & Iron Co., Fifty-second Street and Gray's Avenue, Philadelphia, has awarded contract for a one-story boiler plant, 50 x 50 ft., to cost \$8,000.

The John E. Thropp's Sons Co., foot of Lewis Street, Trenton, manufacturer of tire-making moulds and machinery, is planning the erection of a one-story machine shop, 63 x 320 ft., for increased capacity. It is proposed to install a 10-ton traveling crane. The company is also having plans prepared for a one-story gray-iron foundry on Fair Street, 75 x 350 ft. J. Osborne Hunt, 114 North Montgomery Street, is architect.

The Globe Rubber Tire Mfg. Co., Prospect and Frazier streets, Trenton, N. J., is planning for an addition to cost about \$20,000.

The city of Trenton, N. J., is preparing a petition to have the Trenton & Mercer County Traction Co. effect improvements and extensions, including the purchase of machine tools for its repair shops. Coal-handling machinery is also suggested for installation at its electric power plant.

The Cochrane Brass Foundry, East Wallace and Sherman streets, York, Pa., has leased the former York Bridge Co. plant. It is planned to remove its plant to the new building, which consists of a main structure 60 x 380 ft., and also to increase the capacity. John H. Cochrane is proprietor.

The Central Railroad of New Jersey, 143 Liberty Street, New York, has awarded contract for a one-story addition 70 ft. square, to its power plant at Ashley, Pa., at a cost of \$10,000.

The Adder Machine Co., Wilkes-Barre, Pa., manufacturer of adding machines, has awarded contract for a one-story plant at Kingston, 46 x 52 ft.

The new plant of the Light Railway Equipment Co., Chester, Pa., under construction at Folsom, will consist of a main building, one and two stories, 80 x 200 ft., to cost \$20,000. The company recently acquired about three acres at Folsom and plans to remove its present works to the new location.

Fire, Jan. 16, destroyed a portion of the gun-forging works of the Bethlehem Steel Co., Bethlehem, Pa., known as the No. 7 tempering plant, with loss estimated at \$10,000.

The Merchant Shipbuilding Corporation, Bristol, Pa., is considering the erection of 10 new shipways at its local works for increased capacity, making a total of 22 shipbuilding berths. It is reported that in connection with this extension, additional shop structures will be erected, including plate works, machine shops, etc.

The foundry of the National Foundry Mfg. & Supply Co., Williamsport, Pa., manufacturer of power transmission equipment, boiler grates, etc., was destroyed by fire Jan. 12, together with some patterns then in use, with a total loss of \$25,000. The company immediately leased a vacant foundry nearby and has been running heats there since Jan. 15. R. M. Gingrich is treasurer.

Humphreys & Co., manufacturers of builders' and ornamental ironwork, bolts, washers, etc., Front & Tusculum streets, Philadelphia, are in the market for an automatic rod-bundling machine.

The Albro-Clem Elevator Co., Philadelphia, has removed its plant and office from Seventh Street and Glenwood Avenue to Erie Avenue and D Street.

Fire, Jan. 14, destroyed the power plant at the Masonic Home, near Burlington, N. J., with loss of about \$10,000.

Baltimore

BALTIMORE, Jan. 21.

The Poole Engineering & Machine Co., Woodberry, Md., has acquired more ground in the neighborhood of its plant and it is understood extensions will be made.

The Virginia Iron Works, Norfolk, Va., has been organized with J. G. H. Smith as president.

Emery M. Newton, Keyser Building, Baltimore, is organizing a company to build and operate a shipbuilding plant at Curtis Bay. The proposed works will specialize in the construction of steel vessels.

Fire, Jan. 12, originating in the punch shop at the shipbuilding plant of the Pusey & Jones Co., Wilmington, Del., caused a loss estimated at about \$75,000.

The Commercial Car Body Co., Dover, Del., has been incorporated with a capital of \$1,500,000 to manufacture commercial bodies for automobiles. James H. Hughes and Mark W. Cole, Dover, are the incorporators.

The Norman Motor Truck Corporation, Richmond, Va., recently incorporated in Delaware with a capital of \$5,000,000, has acquired 100 acres at Doswell, 20 miles from Richmond, and plans the erection of a plant for the manufacture of heavy motor trucks. Robert W. Crawford is president, and James H. Price, vice-president.

Fire, Jan. 10, destroyed the machine shop at the general repair works of the Atlanta, Birmingham & Atlantic Railroad Co., Fitzgerald, Ga.

The Liberty Shipbuilding Co., Boston, Mass., is considering the construction of a shipbuilding plant at Port Wentworth, Ga., to specialize in the construction of steel-concrete vessels of about 3000-ton capacity. W. R. Scudder, Boston, and E. B. Briggs, Bath, Me., are in charge.

Fire, Jan. 1, destroyed the main mill and equipment of the Southern Cotton Oil Co., Florence, S. C., with loss of about \$50,000.

The plant of the Carolina Veneer Co., Columbus, S. C., was destroyed by fire Jan. 11, with estimated loss of \$90,000. The machinery loss is about \$50,000. The plant specialized in the manufacture of cabinets and kindred specialties.

The Cheape Adding Machine Co., Charlottesville, Va., has filed notice of increase in its capital from \$100,000 to \$1,000,000.

Chicago

CHICAGO, Jan. 21.

The week has been a quiet one for the most part, although on Saturday last dealers were surprised by a miscellaneous call for tools that amounted most to a rush. Most of the machines wanted were of a character that could be shipped out of stock, and few were desired by makers of war materials. Machinery warerooms were closed to-day, although in one or two cases shipping rooms were kept open to care for the shipment of tools wanted to serve war needs.

Nordyke & Marmon, Indianapolis, Ind., have placed orders for a large number of machines required in their tool room, but in a general way there have been few noteworthy orders.

Steffenson Brothers, who are re-engaging in the business of making screw machine products, will locate at 552 West Harrison Street, Chicago.

The Rockford Milling Machine Co., Rockford, Ill., is completing additions to its shop and office.

The Rockford Tool Co., Rockford, Ill., is occupying a recently completed shop.

Davidson & Weiss, Monadnock Block, Chicago, are the architects for a one-story machine shop to be built at a cost of \$20,000 and occupied by the W. Shuler Machine Co., 200 Ann Street, Chicago.

Plans are being prepared by the Industrial Building Co., 1038 First National Bank Building, Chicago, for a six-story factory, mill construction, in West Thirty-first Street, for the Century Rubber Works, to cost about \$100,000. C. J. Venn is president and H. L. Venn, 1346 Rawson Street, secretary.

The E. I. Du Pont de Nemours Co. will erect a four-story factory on the north branch of the Chicago River, north of Cortlandt Street, Chicago, on a site 250 x 339 ft.

Plans have been prepared by L. Novy, architect, 3223 West Twenty-second Street, Chicago, for a one-story addition to a factory at West Twenty-first Street and Marshall Boulevard, to be occupied by the Western Brass Mfg. Works, 2007 Marshall Boulevard.

Henry Roeder, 20 West Jackson Boulevard, is architect for a one-story munition factory to be erected at Mansfield, Ohio, for the American Clay Products Machinery Co., Bucyrus, Ohio. It will cost about \$80,000 and it is expected that the contract will be awarded to the H. A. Peters Co., 19 South La Salle Street, Chicago.

The H. A. Peters Co., 19 South La Salle Street, Chicago, is completing a munitions factory at 119th Street, Kensington, Chicago, for the American Equipment Co., 111 West Washington Street.

A. S. Alshuler, architect, 28 East Jackson Boulevard, Chicago, is taking bids on a number of one-story buildings, one a machine shop, to be erected on the block bounded by Cortland Street, Armitage, Hamlin and Avers avenues, Chicago, for Rosenwald & Well, clothing manufacturers, 508 South Franklin Street.

H. C. Edwards, 203 South Dearborn Street, Chicago, has placed with the Ford & Phillips Co., 226 South La Salle Street, the general contract for rebuilding a two-story automobile-body factory, 70 x 90 ft., at 2534 Cottage Grove Avenue, Chicago, recently destroyed by fire.

C. Stone & Sons, 1618 Ogden Avenue, Chicago, are having plans drawn for the reconstruction of a three-story automobile repair plant, recently damaged by fire. The insurance on the building and contents was \$44,500.

The Maple City Stamping Co., Monmouth, Ill., has been incorporated with a stock of \$20,000 by J. R. Hanna, W. E. Findley and Joseph Siegfried, Monmouth. Its factory will be located in the building of the Milne Stump Puller Co. The new company will succeed one of the same name whose plant was recently destroyed by fire, and some of the reclaimed machinery will be used.

Milwaukee

MILWAUKEE, Jan. 14.

Owing to weather conditions many local metal-working plants have been obliged to operate at reduced capacity because of the difficulty in obtaining supplies of castings, fuel and other necessities, and the difficulty of workmen in reaching shops. The movement of material between foundries and machine shops is badly hampered, and outgoing shipments of finished machinery and tools have been greatly delayed by railroad congestion. The situation is believed to be without precedent.

Local tool builders continue to report new business in large volume, mainly for Government needs. This not only makes it impossible to catch up on deliveries, but continues to advance the dates.

The Townsend Mfg. Co., Janesville, Wis., maker of internal combustion engines, tractors and farm machinery, has awarded a contract to Joseph Denning, for two shop additions, 60 x 100 ft. and 25 x 40 ft. Increased facilities are made necessary by large orders for tractors and engines from Canada and Europe.

The Mattison Machine Works, Beloit, Wis., manufacturer of wood-working tools and machinery, has increased its capital stock from \$25,000 to \$225,000. It is enlarging its plant and the new issue will be devoted to extensions and to accommodate increased business. C. W. Mattison is president and general manager.

The J. I. Case Threshing Machine Co., Racine, Wis., has commenced delivery on a large order from the French Government for tractors and plows. The contract calls for 2000 gas-oil tractors of the 10-20 hp. type, about 150 machines of larger capacity, and about 2000 3-bottom plows. It will require from 600 to 700 cars to transport the order from Racine to the seaboard, but up to this time the company has only been able to procure 20 to 25 cars a day. The amount of the contract is not divulged, but it is said to be the largest that has been placed with an American farm machinery manufacturing firm since the beginning of the war. The company has just completed delivery of a large order for tractors and separators for the Italian Government.

The board of education, West Allis, Wis., expects soon to call for bids for the construction and equipment of the proposed \$200,000 high school and manual training institute. It will be three stories and basement, 176 x 277 ft., with a separate boiler house.

The Arrow Fuse & Mfg. Co., 2416 North Avenue, Milwaukee, manufacturer of fuses and other electrical goods, supplies and accessories, has re-incorporated with a capital stock of \$100,000 under the style of the Trico Fuse Mfg. Co.

The incorporators are Oscar H. Jung, F. C. Geiler and Arnold Reuss, all officers of the former company.

The Universal Shipbuilding Co., Sturgeon Bay, Wis., has been incorporated with a capital stock of \$1,500,000 by G. A. Huck, Theodore Froemming and Hubert Riesen and will take over the yards and plant of Rieboldt, Wolter & Co., wooden shipbuilders, Sturgeon Bay. Mr. Huck recently secured an option on the yards and an initial payment of \$5,000 has been made. The option expires Feb. 1, when the new corporation expects to have completed its organization. The capacity of the yards will be increased and provision made for the construction of larger ships.

Bliss Brothers, 268 Manufacturers' Home Building, Milwaukee, manufacturers of tools and dies, have recently installed new equipment which occupies all of the available capacity of its present quarters. Later it is expected to erect a complete plant. The business was established about a year ago by William D. and Redmond Bliss.

The Standard Steel Corporation, 1002 Majestic Building, Milwaukee, which will erect a \$50,000 plant at Hopkins Street and Lake Avenue, has established a machine shop in temporary quarters at 491-499 Virginia Street. The company manufactures sanitary steel barn equipment, farm concrete mixers and other steel farm machinery and in its new plant will also operate a foundry. E. J. DeGuenther is general manager.

A. S. Lanich, Baraboo, Wis., is preparing to establish a small shop for the manufacture of builders' hardware, and will specialize in a patented device for opening and closing double doors, from a central point.

The Two Rivers Plating Works, Two Rivers, Wis., is manufacturing fuel-saving and heat-producing attachments for furnaces and boilers and is installing new equipment.

The Liberty Foundry Co., Milwaukee, recently organized, is purchasing a miscellaneous assortment of equipment, including electric motors from 10 to 20 hp. capacity. Work on the foundry in Wauwatosa is progressing rapidly and it is expected to begin operations by April 1. W. J. Buckley, 852 Grant Boulevard, is treasurer.

The Oneida Motor Truck Co., Green Bay, Wis., is operating in its new factory, 150 x 476 ft., which affords 70,000 sq. ft. of floor space. It intends to ultimately increase its production to 275 trucks a month.

The Belle City Malleable Iron Co., Racine, Wis., will start work at once on the erection of a two-story fireproof building to replace the one recently destroyed by fire with a loss of \$100,000. The foundry proper was not damaged. The burned building contained the machine shop, core-room, pattern shop, shipping and stock rooms. Temporary quarters were leased at once and the production of castings has been maintained without reduction. Louis Hanson, foreman of the pattern shop, lost his life while trying to stop the progress of the fire.

The Hartmann-Greiling Co., Green Bay, Wis., shipbuilder and manufacturer of boilers and machinery, has doubled the size of its machine shop and is contemplating other extensions during the year.

The Shawano Lumber Co., Shawano, Wis., at its annual meeting voted to erect a new planing mill to be operated throughout by electric power. The investment will be about \$30,000.

The Clum Mfg. Co., 23-27 Erie Street, Milwaukee, manufacturer of electrical and automobile devices and specialties, has increased its capital stock from \$10,000 to \$100,000 to accommodate its increased business and provide for expansion. Arthur Denniston is president.

The Hardwood Products Co., Neenah, Wis., has increased its capital stock from \$40,000 to \$750,000. The plant has been enlarged the past year and further extensions are being planned, together with the installation of new wood-working equipment. C. B. Clark is secretary.

The Morneau Sanitary Thermometer Case Co., Appleton, Wis., has been incorporated with a capital stock of \$100,000 to manufacture sanitary sterilizing cases and surgical and hospital supplies. The incorporators are Joseph and Clara Morneau and George A. Gehbe. A plant will be established in Appleton, but further details are not yet available.

The J. J. Vollrath Mfg. Co., Sheboygan, Wis., manufacturer of sanitary ware, plumbers' goods, etc., has engaged W. C. Weeks, architect, Sheboygan, to prepare plans for an additional enameling shop unit, 126 x 300 ft., one story, of brick, steel and concrete, to cost about \$50,000 with equipment.

The Valecia Evaporated Milk Co., LaCrosse, Wis., is preparing to establish a condensory and refrigerating plant in West Salem, Wis., at a cost of \$100,000. Plans are being prepared by T. D. Crist, consulting engineer, Madison, Wis. W. R. Montague, LaCrosse, is president.

The Four Wheel Drive Automobile Co., Clintonville, Wis.

which is executing Government contracts for quadruple drive army trucks, has increased its working force to 1200, and is advertising for all of the skilled and unskilled help it can get.

Detroit

DETROIT, Jan. 21.

Of 240,000 employees in Detroit, it is estimated that more than 150,000 resumed work Saturday morning in industries which were exempt from the closing order of Fuel Administrator Garfield, due to the making of munitions. A similar proportion of workers in the outlying districts were also able to resume work.

About 75 per cent of the local industries closed on Friday in compliance with Administrator Garfield's orders, and the remaining factories that are not manufacturing war materials closed Saturday. Manufacturers are pretty well supplied with coal, most of them reporting enough on hand to run for 10 days.

Throughout the State the coal shortage is acute. Flint, Jackson, Ann Arbor, Grand Rapids, Saginaw and other industrial centers have little fuel on hand, and unless the situation is relieved, industries will be forced to close for a longer time than that designated.

Machine tool jobbers are observing the 9-hr. day law promulgated by State Fuel Dictator Prudden, and also closed to-day. The demand for machine tools, which was unusually active until Thursday of last week, has been suddenly stopped by the closing order. During the early part of the week high grade machines for the manufacture of munitions were in particular demand.

The Detroit Shell Co., Detroit, has taken over the plant of the Springfield Body Co., in which it will fill war orders aggregating \$30,000,000. John Kelsey, of the Kelsey Wheel Co., is at the head of the new shop.

The Lincoln Motor Co., Detroit, manufacturer of airplane motors for the Government, has begun the erection of five new units to its plant.

The Detroit Carrier & Mfg. Co., Detroit, has been organized to take over the Detroit Tire Carrier Co. and the Detroit Pitter Fan Co., which have been owned and operated by the same officials and interests. The personnel and management will remain unchanged. W. D. Mercer is secretary and treasurer.

Cleveland

CLEVELAND, Jan. 21.

The shutting down of industrial plants by the Fuel Administrator apparently has had some effect upon the machine tool market, which is quieter than for some time. The Zenith Carburetor Co., Detroit, placed about 20 machines, including hand and automatic screw machines, and two multiple spindle drilling machines with a local machinery house the past week. Several small lot orders have come from Detroit automobile plants having Government contracts. The demand for automatic screw machinery is fairly brisk, having shown some improvement.

The Hahn Mfg. Co., Cleveland, has placed a contract for the erection of a brick machine shop at Hamilton Avenue and East Fifty-third Street.

The Van Dorn Iron Works Co., Cleveland, plans the erection of an addition to its plant on East Seventy-ninth Street.

The Cleveland Controller Co., 811 Citizens' Building, Cleveland, recently organized, has plans prepared for a factory, 40 x 80 ft., on Maurice Avenue, at East Fifty-fifth Street.

The Anchor Fence Post Works, Newark, N. J., has acquired a 6-acre site at Bliss Road and St. Clair Avenue, Cleveland, where it will shortly begin the erection of a plant.

The Monarch Brass Co., Cleveland, has placed a contract with the Sam W. Emerson Co. for the erection of a one-story foundry, 90 x 100 ft., on East Forty-fifth Street, near Payne Avenue.

The Commercial Steel Castings Co., Marion, Ohio, has been incorporated with a capital stock of \$150,000. It is the intention to erect a foundry building, 100 x 175 ft., near the plant of the Osgood Steam Shovel Co., which will be equipped for making 20 tons of open-hearth steel castings per day. An office and pattern storage building will also be built.

The Power Mfg. Co., Marion, Ohio, will erect a building, 80 x 200 ft., for a storage and shipping room. Other extensions are contemplated as soon as this addition is completed.

The Fabricated Steel Products Co., Leetonia, Ohio, has been organized with a capital stock of \$150,000 and has taken over the plant of the Leetonia Boiler Co., which will be enlarged. Punches, shears and riveters will be purchased.

It is working almost entirely on Government contracts for boilers, tanks and other equipment. H. Lindermann is president and W. A. Arnold, secretary.

The Bostwick Steel Lath Co., Niles, Ohio, has increased its capital stock from \$100,000 to \$400,000 in order to take care of increased business.

The Brown Mfg. Co., Zanesville, Ohio, has taken a Government order for 300 army escort wagons and 2000 extra wheels.

The extensive new buildings of the Hydraulic Press Mfg. Co., at Mount Gilead, Ohio, are now occupied and the plant is again in operation to its full capacity. The new equipment represents the most advanced types of metal-working machinery, specially adapted for building hydraulic presses, pumps and valves. The demand for hydraulic power machinery has been steadily expanding both at home and abroad and the doubled production of this plant is already being taxed to meet the needs of both the Government and the manufacturers.

Cincinnati

CINCINNATI, Jan. 21.

The exemptions received Saturday by local machine tool firms engaged in war work enabled nearly all of them to resume operations this morning. Some shops report a smaller force than usual, due to the inability of different employers to notify their employees in time and also to poor transportation service. At Hamilton, Ohio, it is understood that several firms have decided to remain closed until Wednesday and put in the extra time in cleaning up their plants and in making repairs. An exception is the Hooven, Owen, Rentschler Co., which has a large contract for marine engines. This firm was exempted and has been operating continuously.

Scattered inquiries for lathes have been received from firms who are contemplating making munitions, but these are mostly from new companies. The difficulty in making shipments abroad has reduced the export business, and shipments of the portable electric drilling machine makers.

The Stuebing Truck Co., Cincinnati, is removing its offices to the Fosdick Building. Its manufacturing plant will remain at its present location, 308 Walnut Street. The removal of its offices will enable the company to utilize the space occupied for adding to its manufacturing facilities.

The Cisco Machine Tool Co., Cincinnati, has commissioned Harry Hake, architect, to prepare plans for a second story to its main shop. This will make the third addition to this plant in the past 12 months.

The Dayton Machine Products Co., Dayton, Ohio, has been incorporated with \$10,000 capital stock to manufacture dies, jigs and special machine parts. L. E. Hamer is one of the principal incorporators.

The Cuthbert Co., Dayton, Ohio, is a new organization that will be incorporated with \$500,000 capital stock to manufacture electrical devices. Charles S. Hall, of the Hall Electric Co., Dayton, will be one of the principal incorporators.

The Dayton Adding Machine & Time Lock Co., Dayton, Ohio, has been reorganized and will be incorporated with \$1,000,000 capital stock. C. E. Born, formerly of Columbus, Ohio, is president. The company will enlarge its factory on Fifth Street.

The Streine Tool & Mfg. Co., New Bremen, Ohio, has been incorporated with \$100,000 capital stock and has acquired the plant of the O. O. Poorman Co., that has for many years been engaged in the manufacture of sheet-metal machinery. The new company will continue making sheet-metal machinery and will also add sheet-metal products as well as a line of machine tools. Frank H. Streine, formerly assistant manager of the Bickett Machine & Mfg. Co., Cincinnati, is general manager. A. L. Herkenhoff, president, Minster Machine Co., Minster, Ohio, is one of the directors, and the remaining members of the board are Dr. C. L. Dine, C. F. Herkenhoff and J. W. Eiting.

The plant of the American Chain Works, Columbus, Ohio, was recently almost completely destroyed by fire, the estimated loss being \$125,000. It is reported that rebuilding operations will begin as soon as insurance adjustments can be made. A rumor is also circulated that the company's branch plant at Mansfield, Ohio, will be enlarged to take care of its business while the Columbus plant is being rebuilt.

The Standard Bolt Co., Columbus, Ohio, has increased its capital stock from \$500,000 to \$650,000. No information has been given out as to increasing the capacity of its plant.

The Tanner-Robinson Lumber Co., London, Ohio, is fitting up a wood-working plant for the manufacture of boxes for shipping airplanes.

The Troy Carriage Sun Shade Co., Troy, Ohio, has received an order for 100,000 hand grenade carriers. Little extra equipment will be required.

The Semi-Steel Foundry Co., Barberton, Ohio, has increased its capital stock from \$100,000 to \$200,000.

The plant of the Standard Slag Co., Ironton, Ohio, was destroyed by fire Jan. 17, with an estimated loss of \$40,000.

Indianapolis

INDIANAPOLIS, Jan. 21.

The Weidely Motors Co., Indianapolis, has increased its preferred stock from \$100,000 to \$500,000 to provide for enlargement of its plant and the purchase of new equipment. It recently increased its contract with the Cleveland Tractor Co. from \$3,000,000 to \$20,000,000 for the manufacture of aeroplane and tractor motors covering a period of three years. It is contemplated to manufacture 15,000 tractor motors the first year, 25,000 the second and 30,000 the third.

About thirty industries suffered total loss in the destruction by fire, Jan. 13, of the Industrial Building, Indianapolis. The total loss was \$2,000,000, with insurance of \$1,000,000. Among the chief sufferers were: The Empire Automobile Co., \$350,000; the General Industrial & Mfg. Co., owners of the building, \$300,000; the W. K. Milholland Co., manufacturer of machinery and tools, \$300,000; the Diamond Chain & Mfg. Co., \$50,000; the National Insulating & Mfg. Co., \$35,000; the Ott Grinder Co., \$75,000; the Kilo Electric Meter Co., \$24,000; the Ideal Brass Works, \$30,000; the Briant Mfg. Co., \$8,000; the Acme Specialty Co., \$5,000; the E. C. Haupt Machine Co., \$20,000; the Industrial Machine Works, Thomas Bemis, machine shop; the Graphic Metal Products Co., the Industrial Electric Heating Co., the Reliance Specialty Co., the Whiteside Wheel Co., and the Water Loo Bay Tractor Co., losses not given.

The Harms Motor Co., Bristol, Ind., has been incorporated with \$10,000 capital stock to manufacture automobiles. The directors are Herman L. N. I. and David M. Harms.

The Hayes Wheel Works, Anderson, Ind., has a Government contract for 1000 automobile wheels per day for a year. The plant will be enlarged.

The Indiana Brass Co. and the Stewart Wire Wheel Co., Frankfort, Ind., are building additions to take care of Government contracts.

The Guide & Signal Light Co., Indianapolis, has been incorporated, with \$100,000 capital stock to manufacture lighting and electrical appliances. The directors are Richard McClellan, L. Greenberg and Robert Eaglesfield.

The Larsh Road Machinery Co., Terre Haute, Ind., has been incorporated with \$5,000 capital stock to manufacture machinery. The directors are John M. Larsh, Thomas Ferguson, John A. Shepherd, Thomas R. Woodburn and William H. Pollitt.

The Service Motor Truck Co., Wabash, Ind., has erected two new buildings to take care of a Government order for 500 5-ton trucks, to be supplied at the rate of 100 trucks per month.

The R. N. Moore Mfg. Co., Indianapolis, has been incorporated with \$50,000 capital stock, to manufacture corn-planter and machinery. The directors are Ray N. and M. Moore and A. W. Caul, all of Ames, Iowa.

The Ideal Tool Works, Indianapolis, has been incorporated with \$20,000 capital stock, to manufacture tools, implements and automobile parts. The directors are E. L. Crum, Edward C. Klingholz and Jesse W. Titus.

The Vincennes Galvanized Iron Works, Vincennes, Ind., has been incorporated with \$10,000 capital stock. The directors are Peter R., John H. and M. O. McCarty.

The Standard Machine & Electric Co., Indianapolis, has increased its capital stock from \$75,000 to \$100,000.

The Studebaker Corporation, South Bend, Ind., will build a dry kiln, 112 by 244 ft., to cost \$50,000.

The Delta Electric Co., Marion, Ind., has increased its capital stock from \$90,000 to \$115,000.

The Brassie-Bowers Electric Co., Lafayette, Ind., has been incorporated with \$5,000 capital stock, to manufacture electrical appliances. The directors are Ralph E. and Lloyd M. Bowers and Ralph A. Brassie.

The Tritt Electric Co., Union City, Ind., has reorganized as the Titan Engineering Co., with \$50,000 capital stock, to manufacture, starting, lighting and ignition equipment for automobiles, airplanes, etc. W. F. Roberts, of the Remy Electric Co., Anderson, Ind., is manager. The plant will be overhauled and enlarged.

The Elkhart Brass Mfg. Co., Elkhart, Ind., has increased its capital stock from \$60,000 to \$150,000.

The J. Edward Morrison Mfg. Co., Indianapolis, has been incorporated with \$500,000 capital stock to manufacture machinery. The directors are J. Edward Harrison, M. C. Harrison and George C. Harrison.

The Victor Screw Works of Indiana, Indianapolis, has been incorporated with \$50,000 capital stock by Roy C. Allshouse, E. C. Miller and H. G. Power.

The Central South

LOUISVILLE, Jan. 21.

Manufacturers report plenty of inquiries and a good demand. Unprecedented snows and cold weather have seriously slowed up production. Increased activity is looked for as soon as transportation becomes easier.

The Roy C. Whayne Supply Co., Louisville, is in the market for a 3-drum hoisting engine, 8 x 10-in. or larger.

The Kentucky Veneer Works, Louisville, has been incorporated with capital stock of \$100,000 by F. L. Brown, M. E. Freeman, H. M. McCracken and others.

The Cheatham Electric Switching Device Co., Louisville, has been incorporated with capital stock of \$60,000 and contemplates establishing a plant.

The machine shop and equipment at the plant of the National Hame & Chain Co., New Albany, Ind., was damaged to the amount of \$5,000 by the caving-in of a snow-weighted roof. George D. Todd is president.

The John G. Duncan Co., Knoxville, Tenn., is in the market for a 50-hp. locomotive boiler on wheels or skids; also a 15, 20 or 25-hp. boiler on wheels or skids, wheels preferred.

A. Shields, 170 Linden Street, Memphis, Tenn., is asking for prices on a centrifugal air pump, with capacity of 75 to 100 cu. ft. of air per min., from 2 to 4 lb. pressure.

The Clinton Power Co., Clinton, Tenn., has been incorporated with capital stock of \$20,000 by R. R. Sanders, J. M. Gillom, William Hume and others.

A munitions plant is to be established at Chattanooga, Tenn., by Herbert M. Lofton, C. A. Lyerly, W. A. Sadd and Frank Spurlock, who have organized the Southern Machine Co., with a capital of \$200,000. It is proposed to manufacture 6-in. shrapnel shells.

The Louisville Industrial Foundation, 909 Columbia Building, Louisville, announces that the local central power station has over 10,000 kw. surplus electric power for industrial purposes, due to the fact that it owns its own mine and operates its own coal cars. It is also stated that floor space is available in the city for manufacturing purposes.

The Seaman Implement Co., Huntington, W. Va., has been incorporated with a capital of \$20,000, to manufacture tools and implements. G. L. Seaman, Ravenswood, W. Va.; K. M. Hunt and A. M. Ulmstead, Mt. Zion, W. Va., are the incorporators.

The electric power plant of the Appalachian Power Co., Switchback, W. Va., was recently destroyed by fire. It furnished service to about 75 mining properties in the district, and will be rebuilt.

The Continental Car Co., Louisville, manufacturer of car equipment, has increased its capital from \$20,000 to \$100,000.

Texas

AUSTIN, Jan. 19.

It is authoritatively announced that the quartermaster mechanical repair shop of the War Department at San Antonio is to be enlarged and improved at a cost of approximately \$1,000,000. It will cover 30 acres of ground.

The Elgin Brick & Tile Co., Elgin, will construct a new plant with a daily capacity of 40,000 pressed brick, 30,000 rough texture brick and 150 tons of hollow building tile. Producer gas will be used for fuel.

The cotton compress of the Capital City Compress Co., Austin, which was recently destroyed by fire with a loss of about \$50,000, will be rebuilt. D. T. Iglesias is manager.

The Department of Fomento and Public Works, City of Mexico, Mexico, has adopted plans and specifications for a plant for the manufacture of automobiles. It is stated that a specially designed automobile, intended chiefly for army and general public use, will be manufactured.

California

SAN FRANCISCO, Jan. 15.

The shipbuilding yards and machine shops engaged on work for them completely dominate the local machinery market. From day to day the old-established yards announce improvements and enlargements and the new projects report progress and promise of speedy completion. Inquiry for machinery for use outside of shipbuilding is large, but deliveries are delayed so remote that sales are few, and wherever second-hand machinery can be picked up it is being installed. Demand is not usually heavy here at this time of the year, and while there is some complaint there

has been no real hardship on account of the freight situation. If the shipyards can become equipped before the usual heavy seasonal demand arises the machinery situation is not likely to become acute.

With the strike settled and all the shops working full time the question of increasing the labor supply is being given serious attention. There is already some shortage in the smaller shops, and some of the larger could use more skilled machinists. Common labor is plentiful, especially in the interior, due to the cessation of work on the farms, but all the men who really want to work are not having difficulty in finding employment.

The Union Iron Works, San Francisco, has signed a contract for twelve 10,000-ton steel ships and has been authorized by the United States Shipping Board to add four more slips to its Alameda plant. This extension, with the new contracts, will give employment to 6000 additional men. The consideration for these ships is \$30,000,000.

The Pacific Coast Shipbuilding Co., San Francisco, is rushing work on its plant at Bay Point. The plate shed is two stories, 80 x 400 ft.; the machine shop, one story, 120 x 400 ft. There will be a big warehouse, a power-house, an office building, planing mill, etc. The launching ways will be 500 ft. long, 53 ft. wide, with 95 ft. clearance between. An important feature to be embodied in the plant is the use of aerial trolleys for transportation of supplies.

The Spencer, Kellogg & Sons Linseed Oil Co., Minneapolis, Minn., is about to erect a mill in Oakland to cost approximately \$1,000,000 for the crushing and refining of copra into cocoanut oil, to supplement its refineries at Minneapolis and Buffalo.

The Chevrolet Automobile Co., Oakland, announces that the local plant is to be doubled in capacity to handle business forced upon it by a war contract which will completely tie up its eastern plant for some months and necessitates the turning out of the major portion of its 1918 car orders at the local plant.

The Holt Mfg. Co., Stockton, maker of caterpillar tractors, farming machinery and implements, has secured permission of the Commissioner of Corporations to sell 3968 shares of preferred stock for \$396,800 and 5000 shares of common stock for \$500,000. The proceeds from these sales are to be used in plant expansion, permanent improvements and betterments in its two largest factories at Stockton and East Peoria, Ill.

The Liberty Iron Works, Sacramento, now building airplanes for the Government, has secured permission from the Commissioner of Corporations to sell 99,995 shares of common and 80,000 shares of preferred stock, together with bonds not exceeding \$70,000, to J. M. Henderson, Jr., and O. A. Robertson in exchange for all the real and personal property comprising the plant. Authority is also given to sell to the former proprietors 100,000 shares of preferred stock at a par of \$1 per share, in order to provide the necessary working capital for the new corporation.

The plant of the E. H. Edwards Wire Works, South San Francisco, was destroyed by fire the night of Jan. 13, with a loss of about \$250,000. The company was making wire nets for Alaska fisheries, and had recently taken on some Government contracts.

The Shattuck-Ny Machinery & Supply Co., San Francisco, has petitioned the Superior Court for permission to change its name to Shattuck, Ny & Bickford, Inc.

The United States Aircraft Corporation, Redwood, has been incorporated with a capital of \$300,000 by H. S. Howard, Sterling Carr, L. S. Ellis, R. C. Stewart and Joseph Smythe.

The B & B Machinery Co., San Francisco, has been incorporated with a capital of \$100,000 by Luther Elkins, A. H. Jarman, M. Waldmeyer, A. M. Wammer and E. R. Ramsey to manufacture and deal in canning machinery.

The Southern California Truck Mfg. Co., Los Angeles, has been incorporated with a capital of \$150,000 by H. L. Bidelman, W. P. Bidelman, C. R. Crump and C. B. McCall.

The Browntruck Corporation, San Francisco, has been incorporated with a capital of \$100,000 by George S. Murray, C. B. Frayer, Thomas C. Leake, N. J. Mitchell and F. C. Schernstein to deal in engines, motors, machines and appliances.

The Dustin-Roman Auto Top Co., Los Angeles, recently incorporated, has arranged for the construction of a one-story brick factory, 92 x 170 ft., at Figueroa and Ottawa streets.

A roundhouse, blacksmith works, carpenter shop, etc., will be erected by the City Water Department, Los Angeles, at Plummer Street and Cactus Avenue, in the San Fernando Annex.

The Southern California Truck Mfg. Co., Los Angeles, has been incorporated with a capital of \$150,000 by William P. and H. L. Bidelman, C. B. McCall and Claude R. Crump.

George L. Craig, San Diego, Cal., is planning the construction of a shipbuilding plant to include the manufacture of marine engines. The estimated cost is about \$300,000.

The Economy & Comfort Auto-Air-Spring Co. of California, San Diego, has been incorporated with a capital of \$50,000, by A. A., C. H. and R. E. Cox, San Diego.

The Rockwood Sprinkler Co., Los Angeles, has leased property at 218 Commercial Street, for a new machine and repair shop.

The Hanford Mfg. Co., Hanford, Cal., manufacturer of canning machinery, is considering the rebuilding of its plant recently destroyed by fire.

The Moreland Motor Truck Co., Los Angeles, is now operating at full capacity the first unit of its new plant at Burbank. New units now planned will be constructed at an early date. The company is now manufacturing all parts for its trucks with the exception of motors, steering wheels and columns, controls, etc. All clutches, transmissions and frames are being produced at the works. Watt L. Moreland is general manager.

The Moore Shipbuilding Co., Oakland, formerly the Moore & Scott Iron Works has obtained from the Emergency Fleet Corporation contracts for 16 more cargo carrying steel vessels, making 32 in all that this company will build. Property adjacent to the Moore shipyard has been purchased and the plant will be expanded. There are now six launching ways and two more will be built. The Moore company will introduce the fabricated ship plan and expects in this way greatly to increase its output. The new freighters will each be of 9400 tons dead weight, with a speed of 14 knots. New equipment for the plant will probably be bought.

The Pacific Northwest

PORLAND, ORE., Jan. 15.

The car shortage in the Pacific Northwest has improved. The movement of lumber and machinery for the Government is now little impeded and shipments for private account are moving more quickly.

The Pendleton Roller Mills, Pendleton, Ore., R. M. Crommelin, manager, will spend \$10,000 in the installation of dump scales, conveyor belts and other improvements.

Seattle Pattern & Model Works, Seattle, will build a two-story addition, 40 x 100 ft., to cost \$10,000. New equipment will be installed.

The Peninsula Shipbuilding Co., Portland, has received Government contracts for eight steamers costing between \$3,000,000 and \$4,000,000. It has enough business on hand to insure operation until the early part of 1919.

The Northwestern Electric Co., Portland, has begun preliminary construction work on an addition to its plant to cost \$1,500,000 and to develop 13,500 hp.

The Weiser Ice & Cold Storage Co., Weiser, Idaho, will install \$15,000 worth of machinery in its plant.

The plant of the Johnson Elevator Co., Carlton, Ore., was destroyed by fire recently, with a loss of \$22,000. It will probably be rebuilt.

J. A. Prouty of the Prouty Lumber & Box Co., Seaside, Ore., has purchased the mill of the Nehalem Lumber Co., which it will overhaul and improve. It is reported that new equipment will be required.

The plant of the Puget Sound Iron & Steel Works, Tacoma, employed on Government orders, is in danger of being washed away by flood waters of the Puyallup River. A dredging company is working to divert the current and save the main buildings. The plant is valued at \$500,000.

The Superior Welding Co., Seattle, E. F. Sweeney, owner, has leased a plot of ground on First Avenue, South, on which it will erect a new plant and install additional equipment.

The Chase Engineering Co., Spokane, plans the erection of a charging plant for rebuilding electrical machinery and storage batteries.

The Coast Shipbuilding Co., Portland, has leased a site adjoining its plant for additions. It recently received a Government contract for 10 steel ships. A new set of ways will be installed.

The Chilman Shipbuilding Co., Hoquiam, Wash., has secured contracts for two auxiliary schooners for a French company. It contemplates immediately erecting new yards adjoining its repair plant.

The Eagle Brass Foundry Co., Seattle, which recently completed a new plant, has increased its capital stock from \$10,000 to \$40,000.

The Seattle Shipping & Construction Co., Seattle, recently incorporated for \$500,000, has acquired a site on Lake Washington on which it will erect a plant.

The plant of the Kincaid Machine Co., Colfax, Wash.,

was totally destroyed in a recent fire with a loss of more than \$55,000. It will probably be rebuilt.

The Booth-Kelly Lumber Co., Eugene, Ore., is rebuilding its planing mill at Wendling, recently destroyed by fire. An electric plant will be installed to furnish power for operation.

W. E. Warren, Seaside, Ore., will construct a sawmill at Haystack Rock, with a daily capacity of 40,000 ft.

The Grant Smith-Porter Brothers Co., Portland, has secured a contract to supply the Government with 100,000,000 ft. of spruce for airplane construction. It is estimated that an expenditure of between \$10,000,000 and \$15,000,000 will be necessary to carry out this order.

The Portland Shipbuilding Co., Portland, will relocate its plant in Portland. The new site has a frontage of 500 ft.

The Albina Engine & Machine Works, Portland, has received a Government contract for four steel steamers, with a capacity of 4300 tons each and costing \$4,000,000.

The Willamette Iron & Steel Works, Portland, has secured Government contracts for 24 Scotch marine boilers. The order represents between \$500,000 and \$600,000. It has contracts for 10 other boilers, and is turning them out at the rate of nine each month.

Canada

TORONTO, Jan. 21.

The Jenckes Machine Co., Sherbrooke, Quebec, has secured additional contracts which will require the employment of several hundred more men and the erection of extensions. New equipment will also be installed. Additional capital has been brought into the business through interests identified with the Canadian Ingersoll-Rand Co., Sherbrooke. At a recent meeting George Doubleday, New York, was elected president. E. W. Gilman is general manager.

The Canadian Iron Foundries, Ltd., Three Rivers, Que., will build an addition at a cost of \$50,000 and purchase a 16-ton crane elevator. Douglas J. Peake is superintendent.

The Canadian Pacific Telegraph Co., 4 Hospital Street, Montreal, is in the market for a Lundell motor generator, 25-volt, 60 amp. W. D. Neil is superintendent.

The power plant, etc., owned by the Giant Powder Co., Nanoose, B. C., recently destroyed by fire will be rebuilt immediately and new equipment purchased. J. B. Turner is superintendent.

The workshop of the Toronto Electrotype & Stereotype Machine Co., 111 Adelaide Street West, Toronto, was damaged by fire Jan. 14, with a loss of \$5,000. Considerable machinery was destroyed.

The hammer shop of the axle department of the Ontario Steel Products Co., Gananoque, Ont., was damaged by fire with a loss of \$25,000. It will be rebuilt at once.

The McKinnon-Columbus Chain, Ltd., St. Catharines, Ont., has been incorporated with a capital stock of \$1,000,000 by Lachlan E. McKinnon, Donald S. Brisbin, John S. Morrison and others.

The Canadian Die Casting Co., Ltd., Montreal, has been incorporated with a capital stock of \$300,000 by Harry A. Bertram, F. H. Markey, Waldo W. Skinner and others to manufacture castings, etc.

The Boston Insulated Wire & Cable Co., Ltd., Hamilton, has been incorporated with a capital stock of \$200,000 by Benjamin T. Burley, Worcester, Mass. Harry B. Burley, Brookline, Mass.; Grant W. Arnold, Hamilton, and others to manufacture wire, cables, etc.

The Ripley-Peck Hardware Co., Ltd., Windsor, Ont., has been incorporated with a capital stock of \$60,000 by Clifford A. Ripley, Albert W. Peck, William Griesinger and others to manufacture hardware and plumbers' supplies, tools, etc.

The Sydney Foundry & Machine Co., Sydney, N. S., is contemplating the erection of a shipbuilding plant for the construction of steel ships.

A. M. McNicol, box 526, Yorkton, Sask., is in the market for one 250-gal. vertical centrifugal submerged pump and one vertical, 40 hp., alternating current, three-phase, 60 cycle, 550 volt, direct drive motor.

The Dominion Government, Department of Public Works, Ottawa, proposes to build a steel shipbuilding plant at Halifax, N. S. R. S. Desrochers is secretary.

The Swift Canadian Co., Hamilton, Ont., proposes to build a factory, packing house, etc., on Jarvis Street, at a cost of \$500,000. Mackay, Mackay & Webster, Bank of Hamilton Building, are the engineers.

The Berliner Gramaphone Co., Lenoir Street, Montreal, has awarded the contract for the erection of an addition to cost \$6,000.

The Carnation Milk Products Co., Aylmer, Ont., will install condenser equipment to cost \$25,000.

S. H. Smith, clerk, Streetsville, Ont., is in the market for a governor for an electric power plant generating 100 hp.

Dr. Hastings, Toronto, proposes to build a new heating plant for the isolation hospital or to install new boilers in the old plant at a cost of \$7,000.

The Ontario Power Co., which is controlled by the Ontario Hydroelectric Commission, Sir Adam Beck, chairman, has secured a loan of \$1,250,000 from the Bank of Montreal for extensions to its power plant at Niagara Falls, Ont. It is the intention to increase the capacity by 50,000 hp.

Glassco, Ltd., Oakville, Ont., is in the market for an electric labeling machine.

Government Purchases

WASHINGTON, Jan. 21.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, until Jan. 28, schedule 2732½, for one positive pressure motor-driven blower, one single grab bucket, 503-ton iron charging cars, 20 500-lb. coke cars, four 4-ton transfer cars, miscellaneous foundry equipment, one lifting magnet, eight turntables, four track scales, and lining and installing cupola, all for Norfolk, Va.

NEW TRADE PUBLICATIONS

Heat Treating Furnaces.—Standard Fuel Appliance Co., Detroit. Pamphlet. Presents a comprehensive illustrated description of a line of heat treating furnaces using gas or oil as fuel. The features of construction which are common to all the furnaces are first brought out, followed by descriptions of the several different types. In each case a view of the exterior of the furnace is presented, together with a cross-sectional diagram showing the construction and arrangement of the various parts. The descriptive matter is further supplemented by a table of the different sizes that can be supplied. Mention is made of a line of accessories for use with the furnaces as well as some of the special types that have been designed to meet individual requirements. A number of views of installations and a partial list of users are included.

Cutting and Threading Tools for Pipe.—Borden Co., Warren, Ohio. Catalog No. 12. Presents illustrations, brief descriptions and size tables of an extensive line of cutting and threading tools for pipe. The construction of the dies and stocks is gone into at some length, the text being supplemented by views of the different parts. Illustrated lists of repair parts and a number of interior views of the factory are included.

Tools.—Milwaukee Tool & Forge Co., 220 Becher Street, Milwaukee. Catalog. Gives illustrations and size tables of a number of different forged tools. These include cold, pneumatic and cape chisels, blunt and center punches, star drills, hammer and pick heads, etc. Mention is also made of the facilities possessed for the production of special tools.

Recuperative Gas Oven Furnaces.—Tate-Jones & Co., Inc., Pittsburgh. Circular No. 160. Concerned with a recuperative type of furnace using gas as fuel where the range of temperature is from 900 to 2400 deg. Fahr. The design and construction of the furnaces is gone into at some length, the text being supplemented by numerous line drawings and charts of test results. The furnaces are divided into two series, one having a range from 900 to 1600 deg. for toolroom or light manufacturing work for hardening carbon steel, pre-heating or reheating high-speed steels, annealing, etc., while the other which has a range of from 1600 to 2400 deg. is particularly designed for hardening fine cutting tools of high-speed or alloy steels. Illustrations, brief descriptions and condensed specification tables of both classes of furnace are included.

Aligning Reamer.—Taft-Peirce Mfg. Co., Woonsocket, R. I. Bulletin No. 101. Treats of the Martell aligning reamer which consists of an adjustable reamer and a centering device which permits alignment to within a fraction of 0.0001 in. The work which the reamer will do and the way that it does it are discussed at some length and the text is supplemented by numerous views of the different parts of the reamer and the way in which it is being used in a number of shops. This reamer was designed particularly for aligning crankshaft bearings of internal combustion engines, but can also be used for other work of a similar character. Mention is made of several different modifications of the reamer that can be supplied.

Tool Steels.—E. S. Jackman & Co., Chicago. Pocket calendar. Size 2 3/4 x 3 1/4 in. Calls attention to the Blue Chip high-speed and other Firth-Sterling tool steels for which this firm is the sales agents.